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TELEGRAPHIC ADDRESS—LANCET, WESTRAND LONDON TELEPHONE NUMBER—GERRARD 5356

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DISINFECTANTS:—
Boots Pure Drug Co.—
Chloramine-T 14
Condy's Fluid..... 41
Sanitas Co.—
Sanitas Fluid 30
,, Powder 30
,, Soaps, &c. 30

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The Bradshaw Lecture
ON
EXOPHTHALMIC GOITRE.

Delivered before the Royal College of Physicians of London on Nov. 2nd, 1916,

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MR. PRESIDENT AND GENTLEMEN,—I must first say how sensible I am of the honour which has been done me in conferring on me the privilege of delivering this lecture. The subject I have chosen for the lecture is one which has interested me for many years. This is not the first time that it has been selected for the Bradshaw Lecture, but I may perhaps succeed in presenting the subject from a different point of view and in bringing some of the problems connected with it up to date.

INCIDENCE OF THE DISEASE.

During the four years 1911–14 the number of deaths returned in England and Wales as resulting from exophthalmic goitre was 1558 for females and 155 for males. This gives a proportion of 10 females to 1 male. The age-distribution is given for the years 1912–14, and is as follows:—

Under 5	5–	10–	15–	20–	25–	30–	35–	40–	45–	50–	55–	60–	65–	70–	75–	80–85
1	—	6	43	92	93	115	144	133	163	124	97	69	51	22	4	2
—	—	—	4	13	7	7	14	12	15	11	16	9	7	1	1	1

Totals: Females (first line)—1173; Males (second line)—119.

It will be seen from this that the number of deaths in each five-year age-period increases up to 35–40, and the largest number of deaths occurs between 45 and 50. More persons died from the disease over 65 than under 20.

I have collected the records of 438 cases, of which 263 were seen at St. Thomas's Hospital and 175 were private cases. There were 393 female cases and 45 male. Among these cases I have been careful to include no doubtful or incomplete cases. The age-distribution at the onset of the disease was as follows:—

A. *Hospital Cases: 239 Females; 24 Males.*

Ages.	10–	15–	20–	25–	30–	35–	40–	45–	50–	55–	60–	65–	70–
Females ...	2	50	71	44	29	19	15	4	3	1	1	—	—
Males ...	0	4	5	3	3	4	1	1	2	0	1	—	—

Among these cases there were 43 fatal cases, 39 females and 4 males, and the age-distribution at death of these was:

10–	15–	20–	25–	30–	35–	40–	45–	50–	55–	60–	65–	70–
0	8	15	5	8	2	4	—	1	—	—	—	—

B. *Private Cases: 154 Females; 21 Males.*

Ages.	10–	15–	20–	25–	30–	35–	40–	45–	50–	55–	60–	65–	70–
Females ...	0	10	25	24	22	20	19	15	12	3	1	—	1
Males ...	0	0	5	5	4	1	3	3	—	—	—	—	—

It will be observed that in half of the hospital cases the disease had its onset before the age of 25 years, but of the private cases less than a quarter began before this age. The private cases are fairly evenly distributed over the various age-groups. It will be observed also that in more than half of the fatal hospital cases the age at death was under 25, a contrast to the Registrar-General's fatal cases, of which in only one-eighth was the age under 25.

The disease is very rare in childhood, and I have not yet seen a typical case under the age of 12. Among my 438 cases only 2 commenced under the age of 15. Out of the 1290 fatal cases 6 were between 10 and 15, and 1 was reported under 5; the occurrence of the disease in children as young as two and a half years has, however, been recorded more than once.

RELATION OF MENTAL DISTURBANCE.

One of the remarkable features of the disease is the disproportion between the numbers of the two sexes which are affected, and while this is true of other diseases of the thyroid gland, such as myxœdema and cretinism, the difference is not in their case so strongly marked. We have seen above that the returns of the Registrar-General for fatal cases give a proportion of 10 females to 1 male. The clinical cases which I have collected show 393 females to 45 males, a proportion of 9 females to 1 male. It is a matter of universal experience in this country that the disease is comparatively very rare in the male sex, and I doubt the accuracy of statistics from other countries which give a much larger proportion of male cases. Among other diseases which fall with special weight on the female sex are chlorosis, chorea, and osteoarthritis. Chlorosis may be said to be entirely a female disease. Chorea affects between three and four times as many females as males, and, like exophthalmic goitre, often has as exciting cause some emotional disturbance. Its greater prevalence in the female sex, like that of exophthalmic goitre, is no doubt due to the greater inherent instability of the emotional nervous system. The greater incidence of osteoarthritis on the female sex is perhaps connected with pelvic disorders in the female, but it is interesting that the association of Graves's disease with, or its affinity to, osteoarthritis has been the subject of papers by Spender[1] and Llewellyn Jones.[2] I cannot say, however, that I have seen many instances of this association myself. The very unequal incidence of exophthalmic goitre in the two sexes is against the supposition that the disease depends on microbic or other infection.

The tendency of the disease to show itself in several members of the same family is well known. In 7 of my cases the mother was affected with the same disease, and in 3 cases the father. In 12 cases the disease affected one sister of the patient, in 3 cases two sisters, in 1 case three sisters, in 1 case one brother, in 2 cases two brothers, in 3 cases an aunt, in 4 cases, a cousin, in 1 case two cousins, in 1 case a grand-aunt, and in 3 cases a daughter. In 1 case a mother, in 1 case a daughter, and in 1 case a sister were affected with myxœdema. The family history has been better worked out among the private cases than among the hospital, for of these examples 34 occurred among the private cases and only 10 among the hospital cases.

The onset of the illness was preceded by some more or less severe mental shock or strain, worry or anxiety, in at least a third of the cases. A history of this was obtained in rather a larger proportion of the private cases than of the hospital cases. In 26 cases there was a history of the sudden death by illness or accident of a near relation or of the death of several near relations in a short time. The husband died suddenly in 6 cases, the father in 2. The father dropped down dead in the patient's presence or some near and dear relation, such as a brother or child, was killed in an accident or drowned or lost in a submarine. In one case a woman lost her husband, two children, and father and mother within a year; in another the son, father, and sister. There was anxiety over the serious illness of near relations, such as husband, father, mother, or child, in 10 cases. In 1 case it was looking after a husband with general paralysis of the insane for three years. There was a history of worry and strain in 18 cases; this was especially common in the male cases. The occupation in a number of cases was one involving special responsibility. One man was secretary to a waterworks company, and the waterworks broke down. Another was a schoolmaster and had an anxious time with the illness of one of his favourite pupils. Serious money losses was only given as a cause in one instance.

There was some kind of shock or fright, such as fire or alarm of fire, horse running away, gas explosion, in 20 cases. There was a history of preceding accident in 9 cases, such as a bicycle accident or a fall from a horse. In 7 cases the onset followed some more or less severe operation, and in 6 cases it followed prolonged or bad confinements. Some had more than their

[1] Brit. Med. Jour., 1891, vol. i., pp. 1169–71.
[2] Ibid., 1903, vol. i., pp. 1015–17.

share of trouble. One woman had been ill-used by a drunken husband; her mother had suddenly died in her presence, and she had had a fall dowstairs followed by a miscarriage.

Examples of Rapid Onset after Mental Disturbance.

As a rule the symptoms of the disease developed gradually after the shock or strain, but in some cases the symptoms very quickly followed the mental disturbance, and of this rapid mode of onset the following are two typical examples.

1.—A mechanical engineer aged 23, who had always enjoyed good health, went to attest on Dec. 11th, 1915, with the object of joining the Royal Naval Air Service, and told the recruiting officer that that was his desire. He passed the doctor successfully and was told he was "A 1." He was then informed that he was now a soldier in the Army. He was very angry at this and went home in a highly excited condition, but soon returned to the recruiting station to try to get transferred into the Air Service. He was told it could not be done. He had no sleep all night and was still in an excited state next day. As the days went on he altered very much in temperament and became cantankerous and quarrelsome, even disputing with people in church. His heart would beat night and day as if he had been running a race, and he developed constant fidgety movements and there was continual trembling of the body. He rapidly became thinner, in spite of an enormous appetite and a great craving for meat. His eyes, too, soon became very prominent and the neck swollen.

I saw the patient about three months after the onset. It was then a typical case of Graves's disease. The most striking feature was very tumultuous and rapid action of the heart, but there were also marked tremor of the hands, general but moderate enlargement of the thyroid, and moderate proptosis. He seemed at this time to be improving, for the eyes were said to be less prominent and less "wild-looking" than they were soon after the upset.

2.—A man, aged 31, a policeman, was brutally attacked by the friends of a culprit whom he was trying to arrest. He was knocked down and kicked in the abdomen and badly bruised about the legs and ankles. He was confined entirely to bed for a week, and eight weeks later, as he was still ill, he was admitted to my ward. Since the attack he had become very nervous, trembled on the slightest excitement, and also suffered from fits of giddiness in which he with difficulty saved himself from falling. He had lost nearly a stone in weight and had not recovered his strength. When first admitted there was only slight exophthalmos. The pulse at rest was 84 but readily quickened to about 100, and there was some tremor of the hands. The thyroid gland was not appreciably enlarged at this time, but three weeks later there was palpable and visible general enlargement. The exophthalmos was marked, the eyes were staring, and the conjunctivæ glistening. The pulse-rate averaged 90 to 100.

Effects of Sorrow and Grief, Anxiety, and Fear.

The effect of profound emotional disturbance in producing exophthalmic goitre is of very special interest in the troubled and distressful times we are now passing through. Every day brings fresh sorrow to thousands. Grief and anxiety are weighing down the hearts of countless mothers, wives, and sisters. While the women of this country have shown a fortitude and endurance beyond all praise it cannot but happen that the terrible ordeal which they have gone through will produce in some more than a passing effect on the emotional nervous system. I think we shall undoubtedly see in the near future an increased number of cases of exophthalmic goitre.

It has been said that anger is a short madness and fright may be said to be a short attack of exophthalmic goitre. The effects of intense fear, the palpitating heart, the trembling, the starting forward of the eyes, the sweating of the body have been pictured for us by great poets as well as by distinguished naturalists. The ghost in *Hamlet* says:

> "I could a tale unfold, whose lightest word
> Would harrow up thy soul; freeze thy young blood;
> Make thy two eyes, like stars, start from their spheres."

In the great Hebrew epic Eliphaz the Temanite says:

> "Fear came upon me, and trembling, which made all my bones to shake. The hair of my flesh stood up."

And Elihu says:

> "At this also my heart trembleth and is moved out of his place."

The Psalmist plaintively laments:

> "I am feeble and sore broken. I have roared by reason of the disquietness of my heart. My heart panteth, my strength faileth me."

> "My heart is sore pained within me. Fearfulness and trembling are come upon me and horror hath overwhelmed me."

In these passages we see a reference to the protrusion of the eyes, the trembling, the palpitation, and the loss of strength which make up the picture of exophthalmic goitre.

The effect of emotional disturbance in causing a swelling of the thyroid gland is not so well known. The very existence of the thyroid gland is unknown to the laity. But there is, I think, a reference to the swelling of the thyroid in the words *anguish*, *anxiety*, *anger*, which all imply a feeling of compression of the throat. Perhaps the popular consciousness of a lump in the throat or of the heart being in one's mouth is really due to a temporary fullness of the thyroid. That sometimes the neck in the adult female may become temporarily swollen under excitement was known to the ancients.

But while emotional disturbance appears to be the starting point in a considerable number of cases, it must be admitted that no such cause can be traced in many cases of the disease. The disease may come on slowly or rapidly, and sometimes the protrusion of the eyes, sometimes the swollen neck, sometimes the palpitation, and sometimes the nervousness is the first intimation to the patient or the friends that anything is amiss. From what we know of the causation of the disease we recognise that prevention is beyond our power. As far as possible persons in whom there is a family history of the disease should steer clear of occupations involving more than ordinary responsibility, worry, or anxiety.

PERSISTENT THYMUS GLAND.—CONDITION OF THYROID.

During the last 36 years there have been exactly 36 post-mortem examinations at St. Thomas's Hospital on cases of exophthalmic goitre which gives an average of one a year, but 28 of these have occurred during the last 16 years and only 8 in the preceding 20 years.

The most constant feature next to the enlargement of the thyroid gland is the presence in most of the cases of a persistent or enlarged thymus gland.

The presence of the thymus was noted in 26 cases, and it was described as greatly enlarged in 6 cases, large or hypertrophied in 16, and persistent but not large in 4. In 2 more a little thymic tissue was found in the situation of the gland, and in 1 the atrophied remains of the thymus were noted. In 7 cases out of 36 there is no mention of the thymus, but it is possible that in some of these cases it may have been present although not found. The persistence of the thymus in exophthalmic goitre has long been recognised. The weight of the persistent thymus varied from 1½ to 4¼ ounces, and its length was sometimes 4 or 5 inches. The gland in some cases was noted as forming a prominent fleshy mass above the heart or behind the manubrium, or as spreading down in a thick mass to the pericardium, or as stretching down and spread out over the pericardium, or as mingling with the fat of the anterior mediastinum. On microscopical examination Hassall's corpuscles were generally numerous, sometimes of great size, and in all stages of degeneration. Sometimes eosinophiles were numerous. It was noted in some cases that although the gland was large it showed the histological changes not of actively enlarged gland, but rather those of degeneration or some degree of fibrosis was present, but in other instances it was remarked that the gland would be considered normal for a child. In the 3 cases where only an atrophied remnant or a small quantity of glandular tissue was found, in 2, aged 23 and 36, the disease had lasted four years at the time of death, and in the other the disease had started at the age of 20 and gone on with relapses until the age of 29. The oldest subject with a persistent thymus was a woman aged 41. The oldest subject with a large thymus was a woman aged 33. Fourteen of the subjects with a large thymus were between the ages of 18 and 24 and 7 between the ages of 29 and 33.

There were only four post-mortem examinations on persons over 40, and in only one of these was a persistent thymus noted. Professor W. S. Halsted has recorded a case where a woman, aged 47, who died 30 hours after a thyroidectomy was found to have a large thymus extending from the top of the manubrium to, and partly covering, the auricles of the heart.

What part the persistence of the thymus gland plays in the disease is at present uncertain. The possible relationship of exophthalmic goitre to the condition known as

lymphatism or status lymphaticus has to be considered. In this condition, as is well known, there is a dangerous state of weakness of the heart and lowering of the power of resistance. Many cases have been reported of death from chloroform or other anæsthetic, and fatal syncope may occur from some slight cause. It is significant that a persistent thymus is found in so large a proportion of the cases of exophthalmic goitre which succumb under operation. The status lymphaticus, however, is a condition which is more frequent in males than females in the proportion of about 10 to 7, and if persons with the status lymphaticus are specially predisposed to exophthalmic goitre one would expect the number of male cases to be greater than it is in the latter disease.

In 10 cases the thyroid gland was described as much enlarged, weighing from 4¾ to 7 ounces. In 14 cases it was simply said to be large. It was slightly or moderately enlarged in 5 cases. In 4 cases there is no special remark about its size. In 2 cases it was described as surrounding and constricting trachea and œsophagus. In one of these cases the lobes met behind, the trachea was compressed laterally, the cartilages being softened and in places almost destroyed. In another case there was also lateral compression of the trachea, and in a case in which the right lobe had been surgically removed the greatly enlarged left lobe lapped round the pharynx. In 2 cases a large number of cysts were present varying in size, and the surface on this account was irregular. The microscopical appearances were in most cases those which are considered typical of Graves's disease and which are fully described elsewhere.

In 3 of the fatal cases the duration of the disease was less than six months, in 10 it was from six months to one year, in 12 from one to two years, in 8 from two to six years, and in 6 over six years. In more than half of the cases the duration was less than 18 months.

COURSE OF THE DISEASE.

With regard to the symptoms of exophthalmic goitre these have been so often and so well described that I need not dwell on them now. I may briefly refer to the blood picture which is fairly constant in typical cases of the disease and may be a help in diagnosis in doubtful cases. Nothing abnormal is usually observed in the case of the red corpuscles, but with regard to the white cells leucopenia is the rule with a relative lymphocytosis. There is no absolute increase in lymphocytes; it is the deficiency of the polynuclears which brings about the leucopenia. Such a blood picture is, however, by no means peculiar to exophthalmic goitre, but is also found in myxœdema, acromegaly, and, in fact, in any disease of the glands of internal secretion.

The attention which has been directed to the rôle played by the thymus in exophthalmic goitre has prompted the search for functional tests which would reveal the presence of overactivity on the part of the thyroid gland. Such tests, if of proved value, would assist in the diagnosis of incomplete, doubtful, or early cases of exophthalmic goitre. All except two are too complicated to be of practical value. 1. Claude Baudouin and Porak[3] have investigated the action of hypodermic injection of extract of the posterior lobe of the hypophysis. In the case of normal subjects the pulse becomes accelerated within a few minutes after the injection and returns to normal in about twenty minutes. In exophthalmic goitre, on the other hand, the injection quickly slows the pulse, although only to a slight extent, the effect passing off in 7 or 8 minutes. 2. Loewi's[4] adrenalin test is the dilatation of the pupil which follows the installation of 1 1000 solution of adrenalin into the conjunctiva in exophthalmic goitre. It has also been found positive in diabetes.

It has always seemed to me a somewhat remarkable feature of exophthalmic goitre that the severity of the illness does not bear any constant relation to the size of the thyroid. Some of the cases with a much enlarged thyroid are not of a severe type, while others in which the thyroid is scarcely or not at all palpable are of quite an acute type. I have seen several cases with extreme exophthalmos, marked nervousness, wasting, and tachycardia without thyroid enlargement. One must take it that size is not a measure of activity. In 2 cases which terminated fatally there was rapid diminution in the size of the thyroid during the few weeks preceding death. Both these cases were also remarkable for the degree of general body wasting which took place. In one case the patient weighed 8 st. 9 lb. on admission to the hospital and ten weeks later, shortly before death, she weighed only 5 st. 6 lb. Vomiting was a marked feature of this case. Although the thyroid in these cases much diminished in size, it was found at the post-mortem to be still larger than normal. One was described as twice as large as normal, the other slightly enlarged and weighing 1¾ ounces.

The degree of wasting which sometimes takes place in exophthalmic goitre is extraordinary. I could give many illustrations of this. Wasting is generally an unfavourable symptom, while gain of weight is favourable, but even extreme degrees of emaciation may be recovered from, of which the following is a typical example.

A woman age 41 was admitted to hospital in 1907 with 11 months' history of illness following influenza. She was very emaciated, weighing 4 st. 5 lb., her ordinary weight being 6 st. 13 lb. dressed. For nine months she had been unable to walk. She had distinct proptosis, slight swelling of thyroid, tremor, and rapid cardiac action. She had been delirious at night for five months before admission, and she had incontinence of urine and bacilluria with some pyrexia. She continued to lose weight for the first four weeks, and her weight fell to 3 st. 12 lb. She was given rodagen ℥ss. b.d. for six weeks and then ℥i 4tis horis for four weeks more. She remained in hospital 7½ months, and gradually improved. On leaving, her weight was 6 st., but her pulse was still quick.

The long duration and very slow progress in some cases is illustrated by the following examples:—

1. The patient, a married woman, when I first saw her was aged 50. She was complaining of palpitation and tiredness. She had a moderate goitre and a moderate degree of proptosis. Her pulse-rate was 120. She said the prominence of the eyes had gradually been coming on for ten years. Six or seven years ago she began to feel a throbbing in the throat, but she was not aware of the presence of a goitre until four years ago. She was thin and she said she had fallen away very much. She remained under treatment for six months without much change. I saw her next nine years later at her own house. She was now 59. She had a high degree of exophthalmos with very wide palpebral fissure. She was in a state of extreme nervousness with much tremor. She was extremely thin. Her heart was rapid and irregular. The thyroid enlargement was moderate and general and the veins over it were enlarged and pulsating.

2. A woman at the age of 22 developed a swelling in her neck and her eyes became prominent. The swelling gradually increased, and she suffered from trembling and palpitation, and she attended the Brompton Hospital as an out-patient for some years. At the age of 42 there was still exophthalmos and slight enlargement of the thyroid, and there was much visible pulsation in the vessels of the neck.

3. A man at the age of 22 developed typical symptoms of exophthalmic goitre. Previous to onset he was fireman to locomotive engine. His illness never incapacitated him from work, and he had no treatment. At the age of 39 he had still some exophthalmos and thyroid enlargement. He died shortly after from acute diarrhœa.

On the other hand, we meet with cases which run a rapid course and terminate fatally in from six weeks to three months from the onset. Of this rapid course the following is an example.

Rapidly fatal case.—A married woman aged 31. On April 17th, 1916, she received a shock—the news of the death of her husband, killed at the front. She suffered from trembling and palpitation and dryness of the mouth and throat. She became very nervous, started at the least sound, and had a feeling of pins and needles all over. She was admitted to St. Thomas's Hospital a month later. There was marked tremor of the face and hands and rapid cardiac action, usually 120. She was very thin and weighed only 5 st. 8 lb. Exophthalmos was not obvious, and neither von Graefe's nor Stellwag's sign was present. There was no obvious enlargement of the thyroid gland at first, but later a slight swelling was evident. She lost 7 lb. more in weight in a month. Then she became drowsy. Sugar, acetone, and diacetic acid appeared in the urine, and she died on June 30th, two and a half months after the onset of her illness. At the post-mortem examination the thymus was found to be much enlarged, spreading downwards in a thick mass to the pericardium. Both lobes of the thyroid were enlarged. The right side of the heart was dilated.

There is reason to believe that in about 25 per cent. of the cases death results from the disease, and that under ordinary medical treatment in about 50 per cent. more or less complete recovery will eventually take place, while in the remainder the disease continues in a chronic form during life.

[3] Bull. et Mem. Soc. Méd. d. Hôp. de Paris, 1914, xxx., No. 22.
[4] Wien. klin. Wochenschr., xx., 1907, 782.

Most of the recoveries are met with among the slighter cases, and among the more severe cases it is certainly very rare to attain what can be admitted to be a complete recovery. Let us hope that improved methods of treatment will bring us better results among the more serious cases.

TREATMENT.

As I have said elsewhere, the natural course of the disease is so variable that there is great difficulty in correctly interpreting the effects of treatment. Under similar conditions as to treatment some cases improve rapidly, some remain stationary for a long time; others fluctuate or steadily lose ground and end fatally. I think I may safely say that I have made a trial of every known remedy. Of drugs, bromides are certainly useful where the nervous symptoms predominate. Belladonna seems to quiet the heart and sooth the nervous system. Opium is useful when there is looseness of the bowels. Phosphates and calcium salts seem to benefit when there is progressive loss of weight. I have tried all the organic preparations—thymus, pituitary, suprarenal, thyroid—separately and in combination, and have not found any special virtue in any of them. I am quite unable to endorse the eulogy of the late Dr. George Gibson [5] as to the effects of suprarenal extract: "The rate of the pulse is reduced, the protrusion of the eyeballs disappears, the thyroid gland diminishes, the tremor along with every other nervous symptom vanishes, and the patient is restored to health in a way that we never see under any other method of treatment."

The attempts which have been made to obtain a useful remedy from the serum or milk of thyroidectomised sheep or goats have ended in failure. For a time, through the kindness of Mr. Walter Edmunds, I had an ample supply of milk from goats which had been deprived of their thyroid glands. No obvious benefit resulted from the treatment. The serum prepared by Merck and the substance called thyroidectin are quite inert. The powder called rodagen seemed to be beneficial when given in large doses in certain cases where wasting was a marked feature, but I think it is probable that casein would have had the same effect.

The general principles of treatment of the disease are well understood and agreed upon. But there are two important methods of treatment which are still *sub judice* and which, I think, specially require discussion at the present time. These are X ray treatment and operative treatment.

X RAY TREATMENT.

The effect of X ray exposures in reducing splenic enlargements, especially in cases of myelæmia, led one to hope that similar results might follow their application to the goitre of Graves's disease. It is many years since I first employed it, and its use has probably occurred to many independently. But although I have made use of it for many years and in many cases, it is only recently that I have had the most convincing evidence of the effectiveness of the treatment. I may say that I have gone on using the treatment not because I had met with any very striking success in my own practice, but because I was favourably impressed by the reports of benefit from X ray treatment published in the medical journals from time to time. I not only tried the effect of X ray exposures over the thyroid, but also over the thymus, and I was induced to try this because I was not satisfied with the results of X ray thyroid treatment. In 1909 I treated a number of cases in this way. Whether the treatment was employed over too short a time or not I do not know, but I obtained no very conclusive results at that time.

I shall give a few illustrative examples, showing sometimes improvement, at other times no obvious effect, and then I shall relate the most remarkable case which I have as yet met with.

1. A single woman aged 18 was treated in St. Thomas's Hospital from July, 1909, to February, 1910. It was a typical case and there was a six months' history. X ray treatment to the thyroid was started on August 20th, and she had applications of ½ pastille through boiler-felt filter for 10 minutes twice a week until Oct. 2nd. On Nov. 20th X ray treatment over the thymus was commenced. She had applications twice a week for three weeks, then once a week for three weeks, and again twice a week for three weeks. On discharge her eyes were less prominent, the goitre was smaller, and she had increased a few pounds in weight, but her pulse was 104, the same as on admission.

[5] THE LANCET, 1912, vol. ii., p. 216.

2. A single woman, 18, telephone operator, admitted to hospital in June, 1906, and remained until February, 1907. There was a five months' history. She had lost a great deal of flesh, and weighed on admission only 4 st. 9¾ lb., her height being 5 ft. 2 in. It was a typical case, with marked proptosis, considerable enlargement of the thyroid, and a pulse-rate of 120 to 128. During the first month she took very little food and occasionally vomited, and her weight fell to 4 st. 2 lb. She started X ray treatment on July 28th twice weekly, and her weight slowly increased until it reached 5 st. 6¾ lb. in November and 6 st. 10 lb. in February, 1907. The goitre, however, gradually increased in size and the neck, which was 12 in. in circumference in June, was 13½ in. in November and 14½ in. in January. Although her nutrition and general condition much improved, her pulse-rate continued rapid—112. There is no record how many X ray applications were made, but they were numerous, and a very extensive freckling of the skin was produced. She was kept under observation during 1907, and during that time her pulse-rate was always quick—146 to 164. She was readmitted March 2nd, 1908, and her condition was much the same as when she left a year previously, except that her goitre had recently become larger, the neck measuring 15½ in., and the tremor was more marked. She was in the hospital for nine months, but there was no further improvement except gain in weight, her weight in November, 1908, being 7 st. 10 lb. In November, 1910, there was still considerable thyroid enlargement, the proptosis was still marked, there was a good deal of tremor, and the pulse-rate was 150.

3. A single woman, aged 25, milliner, came to St. Thomas's Hospital in August, 1908, with typical symptoms of Graves's disease of one month's duration. Under treatment she gained some weight, but the goitre increased in size and became very large, the pulse continued quick, 120 to 136, and the proptosis became more marked. In January, 1910, the exophthalmos became extreme and the right eyeball was twice dislocated but easily went back. In February, 1910, X ray treatment was started and was continued twice a week for over six months. At first her weight as well as the thyroid enlargement diminished, but at the end of September her weight had increased nearly 2 st. It was noted on Nov. 18th, 1910, that the patient's condition had much improved. She was able to be back at her business. No palpable enlargement of thyroid now. Proptosis decidedly less. Hands quite steady when held out. Pulse-rate 108, as compared with 120 at first.

4. A single woman, aged 32, was treated in St. Thomas's Hospital from February to June, 1910. There was a two years' history. On admission there was a high degree of exophthalmos. The pulse was 120. No enlargement of the thyroid was made out at this or at any other time. She lost a stone in weight during the first six weeks she was in the hospital, but subsequently regained it. She was treated with X rays over the thymus from March 16th to May 31st, and had 12 applications altogether. The most marked improvement was in the pulse-rate, which for the first six weeks was 100 to 120, but for ten days before discharge averaged 80.

In the following two cases of rapid progress X ray treatment appeared to be powerless to influence the march of the disease.

5. A woman, aged 19, was admitted in May this year with twelve months' history of exophthalmic goitre of gradual onset after some trouble or shock. It was a typical case, with considerable thyroid enlargement and the marked nervous symptoms. She received three X ray treatments at a week's interval. She, however, rapidly lost weight at the rate of 12 lb. in a fortnight. The tremor increased. She had to be hand-fed. Her mind wandered and she died from cardiac failure. A large thymus was found at the necropsy.

6. A young woman, aged 20, married, was admitted to hospital in September, 1916. About three months before she had some trouble and anxiety, but she was not really ill until about two weeks before her admission, when she felt nervous, depressed, and tired. There were slight exophthalmos, moderate thyroid enlargement, a pulse-rate of 120, and fine tremors of the hands. She had three X ray treatments in three weeks, but she rapidly lost weight to the extent of 19½ lb. Her pulse-rate in the fourth week became more rapid, her temperature rose, she rapidly became weaker, and she died four weeks after her admission. The chief feature of the post-mortem examination was the presence of a very large fleshy-looking thymus.

X RAYS CONVERT EXOPHTHALMIC GOITRE INTO MYXŒDEMA WHICH IS CURED BY THYROID TREATMENT.

The following case is of great importance and interest, showing as it does that a case of exophthalmic goitre can be converted by means of X rays into a case of myxœdema and then by means of thyroid treatment can be restored to a normal state. The total number of treatments in this case amounted to 36 and extended over a period of four years. It seems to me that a possible reason why X ray treatment

has not hitherto yielded better and more convincing results is that it has not been persevered with sufficiently long. In many cases the treatment has been given up after a comparatively short course because no very obvious improvement had taken place.

The patient, aged 23, came under treatment in March, 1912. For 18 months she had had enlargement of the thyroid and for 14 months exophthalmos. On admission to the hospital the thyroid gland was uniformly and considerably enlarged, the circumference of the neck being 14¾ inches. There was a moderate degree of exophthalmos. The pulse-rate varied between 104 and 136. The blood pressure was 156 mm. and the blood picture was typical. There was well-marked tremor. She left at the end of June with general improvement. The enlargement of the thyroid was considerably diminished, the neck measuring 2¾ inches less in circumference than it did on admission. She had one application of X rays in June before she left. After leaving the hospital she gained a stone in weight, but her thyroid enlarged again, and at the beginning of November her neck had increased 1½ inches. Her pulse-rate continued rapid, 120 to 140. In November and December, 1912, and in January and February, 1913, she had nine applications of X rays without any diminution in the size of the thyroid, which, if anything, got a little larger. Up to the beginning of February she was increasing in weight, and then she was 25 lb. more than when she left the hospital. During the next four months she lost weight steadily to the amount of 18 lb. She remained in about the same condition until March, 1914, but her general health was fairly good and she was able to be at her work. In March, 1914, she resumed X ray treatment, and I lost sight of her for a time. She then weighed 9 st. 12 lb. She had X ray treatment on the following dates during 1914: March 9th, 16th, 23rd; April 20th; May 11th, 18th, 25th; June 8th, 22nd, 29th; July 20th; August 10th, 24th; Sept. 7th; Oct. 19th; Nov. 16th, 30th; and Dec. 29th—18 applications in all. During 1915 she had treatment on Jan. 26th, March 23rd, April 29th, June 8th, July 6th, August 9th, Oct. 12th, and Nov. 9th—eight applications.

The patient returned to see me in March, 1916, with the typical appearance of myxœdema. She stated that she had been getting stouter for about six months. Her face had become puffy, her legs thick, and her hands large. She had felt the cold very much during the winter and her limbs were scarcely ever warm. Her hair was very dry and was coming out very much. Her voice was getting very thick and hoarse, and her speech was slow and monotonous. Her pulse was 80 and her weight was 10 st. 12 lb. No thyroid enlargement could be made out. She was put on thyroid tablets, 1 grain (representing 6 grains of gland) twice a day. In two months all signs of myxœdema had disappeared, and her weight was reduced to 9 st. 6 lb. She continued the thyroid tablets, and when seen in July, 1916, the only remaining sign of exophthalmic goitre was that the eyes were very slightly prominent, but neither Stellwag's nor von Graefe's sign was present. There was no thyroid enlargement. Her heart was going quietly at the rate of 72. She was doing her work as a general servant, and was quite equal for it. I saw her again on Oct. 24th, 1916, and her condition remained normal except that she had to continue the thyroid tablets. Her blood picture was then quite normal.

I have never before seen such a complete disappearance of the signs and symptoms of well-marked exophthalmic goitre as has taken place in the above case. I think one is justified in ascribing the cure to the prolonged X ray treatment.

Views on Treatment with X Rays.

My present views on X ray treatment are: It may prove to be far the best means of treatment at our command. It must be applied in no half-hearted way. It must be persevered with and in many cases continued for a long period of time. It is most likely to prove beneficial in cases where the thyroid enlargement is moderate and the patient is not so seriously ill as to necessitate confinement to bed. I think it may prove valuable in bringing about a retrogression of the remaining thyroid after a hemithyroidectomy. I have not at present sufficient evidence to speak of its usefulness where the goitre is a very large one. It has seemed to fail, as other remedies do, in cases of a severe type and rapid course. The trend of present experience in respect of X ray treatment is decidedly in favour of its further trial, and I would draw attention to a few recent important references to its effects.

Professor Halsted[6] has recently been making trial of X ray treatment of the thymus which I have mentioned I employed seven years ago without any very striking results. But Professor Halsted has used it in cases where he had previously removed most of the thyroid and the resulting improvement was not satisfactory. In these cases he thinks the X ray treatment has been very satisfactory.

Professor George Murray[7] has stated that treatment with X rays has in some of his cases proved to be of great value. The gland gradually diminishes in size and the symptoms subside. These changes are, however, slow in development, so that the full effect of the treatment is not obtained until some months have elapsed. Fifteen to twenty weekly treatments have brought about great improvement or practical recovery in some cases. In others only slight improvement has followed similar treatment. He thinks it is worth while to persevere with X ray treatment for as long as 12 months if satisfactory progress is being made.

Dr. Florence Stoney[8] has written enthusiastically of the effects of X ray treatment. Of 48 cases treated (of which 22 had no exophthalmos) 14 (of which 5 had no exophthalmos) were cured. The average number of treatments of the cases cured was 31, the smallest was 10, and the largest 50. She gives a small dose each time about seven to ten minutes. In acute cases she gives it twice a week for a month, then stops it for a fortnight. In chronic cases one treatment weekly suffices, but it must be continued in severe cases for six to eight months. Early cases are cured with a few treatments. Long treatment is only required where the case is very acute, where rest is unattainable, or where the case is of old standing.

Of the effects of radium treatment I have no personal experience to relate. Reports which have been published by D. Turner[9] and others seem to show that they are very similar to those of X rays, and if this is confirmed radium treatment would be a valuable addition to our armamentarium. It is obvious that radium treatment might be employed in cases where X ray treatment was unobtainable.

SURGICAL TREATMENT.

Surgical methods of treatment of exophthalmic goitre have long been advocated and employed with the object of bringing about a more certain, a more lasting, and a speedier cure than can be obtained by other means. In the first cases in which partial thyroidectomy was performed the operation was done to relieve dyspnœa as in a case operated on by Lord Lister in 1877. It was found that not only was the dyspnœa relieved but all the symptoms were alleviated.

If the controlling and fundamental agent in keeping up the symptoms of the disease was the hyperplasia and over-activity of the thyroid gland, it seemed the most hopeful and rational means of treatment was to attempt to control that, and to the surgeon the use of the knife seemed the most natural method of dealing with it. He could cut away as much of the gland as was superfluous and leave the patient with just as much thyroid gland as was necessary for health. The theory seemed attractive; how did it work out in practice? Unfortunately, it was found that the operation had special dangers of its own, and while partial thyroidectomy in ordinary goitre was a comparatively safe operation, in exophthalmic cases it not infrequently proved fatal. The earlier statistics showed a death-rate of over 12 per cent. for the whole number, and among the severe cases it was as high as 22 per cent. Later statistics show better results, however.

My own experience of operation in cases of exophthalmic goitre has, on the whole, been very unfavourable. In several chronic cases in which the tumour was large partial thyroidectomy has been successfully carried out with relief to the patient, but although I have seen patients who have been benefited I have not seen any case that I could say was actually cured.

The risks attending thyroidectomy being considerable, surgeons have introduced modifications of the operation to diminish the danger. Ligature of the thyroid arteries was done as a preliminary in many cases, and according to Kocher it was found that ligature of one superior thyroid artery brought about a slight amelioration, which was increased by ligaturing both, and still more by ligaturing the inferior thyroid on one side in addition. So it came about that ligature of the arteries was frequently done as a preliminary to hemithyroidectomy and sometimes as a curative method in itself.

[6] Johns Hopkins Hosp. Bulletin, vol. xxvi., pp. 55-57.

[7] THE LANCET, 1913, vol. ii., p. 202.

[8] Brit. Med. Jour., 1912, vol. ii., pp. 476-79.

[9] THE LANCET, 1913, vol. ii., p. 924.

If I now give a few details of my experience of the results of operative treatment at St. Thomas's Hospital during the last ten years, it will be understood why I have not hitherto been of opinion that it is the most promising or the safest means of treatment at our disposal. The first three cases were very discouraging.

1. In 1905 a woman aged 21, who had had symptoms of Graves's disease for two and a half years, was admitted under my care. She was a typical case. She remained some months in the hospital with little change in her general condition. Then it was decided to give her the chance of benefit by operation. Right hemithyroidectomy was performed under general anæsthesia. She stood the operation well, but she became restless and delirious and later comatose, and died 26 hours after the operation with great rapidity of pulse and respiration. A large thymus was found to be present.

2. In 1906 a girl aged 16, who had had symptoms of Graves's disease for three months and was not improving, was operated on. Right hemithyroidectomy was performed under general (ether) anæsthesia. The operation was difficult. The patient bore the anæsthetic badly, having two attacks of dyspnœa during its administration, and, like the other case, after the operation became delirious and collapsed, and died comatose after seven hours. No post-mortem examination was performed.

3. In 1908 a woman aged 43, with eight years' history of Graves's disease and with marked exophthalmic goitre and general excitability, was admitted to the hospital. Partial thyroidectomy was performed under general anæsthesia. She died eight days later with septic bronchopneumonia. The thymus was not recognised.

These three fatal cases in succession were not encouraging, but in 1909 two cases were operated on, one ligature of arteries, the other hemithyroidectomy, and both recovered. In 1910 7 patients were operated on with one death. Of these, 2 were cases of ligature only and 5 were thyroidectomies with or without ligature. The fatal case was a man aged 19, who for five months had had symptoms of Graves's disease, and these were typical on admission to the hospital. He was operated on after he had been in the hospital two months. He died under a general (C.E.) anæsthetic during thyroidectomy. No post-mortem examination was made.

In 1911 6 cases were operated on, all ligature of the superior thyroid arteries, and of these 3 proved fatal—two a few hours after the operation, the third after an interval of 14 days. In all these three cases there was a very large thymus, and the thyroid was also much enlarged. The ages of the patients were 18, 21, and 30.

In 1912 only one case was operated on, and that proved fatal. The case was that of a woman aged 29 with an 18 months' history. There was a high degree of exophthalmos and a moderate goitre. She was losing weight, 9 lb. being lost in the five weeks preceding operation. Both superior thyroids were ligatured, and the isthmus was excised under hedonal anæsthesia. She died the following day after tachycardia, pyrexia, and rapid respiration. There is no mention of thymus in the post-mortem report.

In 1913 6 cases were operated on, 1 ligature of arteries, which recovered, and 5 hemithyroidectomy, 2 of which proved fatal. Of the fatal cases 1 was a woman aged 33 with an eight months' history of Graves's disease. There was much restlessness and general nervousness. The goitre was a large one. The right lobe was removed under hedonal anæsthesia, and death ensued 10 hours after the operation. The thymus was found at the post-mortem examination to be much enlarged. The other fatal case was a woman aged 23 with 12 months' history, the symptoms coming on after fright. She improved under medical treatment and gained a stone in weight. There was marked exophthalmos and the thyroid was much enlarged. She died under anæsthesia. At the post-mortem examination the thymus was found to be enlarged, although repeated X ray examination had shown no sign of this.

In 1914 3 cases were operated on, 2 ligature of arteries, which recovered, and 1 left hemithyroidectomy, which proved fatal four hours after the operation. The fatal case was that of a woman aged 18. A persistent thymus was found at the post-mortem examination

In 1915 3 cases were operated on—2 ligature of arteries which recovered and 1 hemithyroidectomy which proved fatal 10 hours after the operation. The fatal case was that of a woman, aged 35, with a three years' history. She never recovered consciousness after operation. At the necropsy no evidence of lymphatism was found.

In 1916 2 cases have been operated on, both hemithyroidectomy; 1 recovered and 1 died. The fatal case was a man, aged 29, with a history of an attack of exophthalmic goitre nine years previously, from which he practically recovered. There was a relapse three months before operation. He only survived the operation a few hours.

Summary of Results and Views on Operative Treatment.

To sum up the results of operations, in 15 cases ligature of the thyroid arteries was performed and of these 3 terminated fatally—2 a few hours after the operation and 1 after an interval of 14 days. In 3 of the 12 cases which recovered the symptoms were not typical and it is doubtful if these were true cases of Graves's disease. In 19 cases thyroidectomy was performed, of which 8 ended fatally. In 4 of the 11 which recovered there was no evidence of Graves's disease found on microscopical examination of the thyroids. In only 2 cases, and both of these cases of ligature of thyroids, was local anæsthesia employed. Of the cases which recovered from the operation no obvious change for better or worse was observed in 12 cases. In 2 cases of ligature of arteries general improvement was noted after the operation. In 2 cases after ligature the patient was worse, in one the thyroid increasing in size and the eyes becoming more prominent, and in the other the pulse being very irregular after the operation.

Our results at St. Thomas's, then, altogether are not at all encouraging. There has been a percentage of deaths amounting to 42 per cent. among the thyroidectomies and to 20 per cent. among the cases of ligature of arteries. It may be noted that the percentage of fatal cases was much higher among those under 25. For persons under the age of 25 the percentage of fatal cases was 53, while for those above the age of 25 it was 24.

Such being my experience among hospital patients, it is not surprising that I have not been an advocate of operation among my private patients. But of the latter a certain number have come under surgical treatment. Some of these have died, and I cannot say whether the others have been much the better for the operation.

A male patient aged 49, whom I saw with Dr. Barclay Baron of Clifton, had had symptoms of exophthalmic goitre for 12 months. It was a typical case, and there had been much loss of weight. Under medical treatment he improved and put on weight, but the goitre increased in size. Later on Dr. Baron took him to Berne, where Professor Kocher ligatured first one superior thyroid and then the other. He was to have had a hemithyroidectomy, but he died from pneumonia after the second operation.

Another case was a woman aged 28, who had had symptoms of Graves's disease for a few weeks when I first saw her. She improved very much under medical treatment, but after a time I lost sight of her. Recently I had a letter from the doctor who sent her to me, saying: "Some time after you saw her a well-known surgeon operated on Miss ——, and she died next day."

It is difficult to understand why the results of operation at St. Thomas's Hospital should have been so unfavourable as a whole, while from reports published by many surgeons such a favourable impression of operation results is to be obtained.

Klose[10] published in 1913 a table giving results of operations for exophthalmic goitre by various surgeons from 1896 to 1912. The percentage of cures or of considerable improvement ranges from 50 to 98·7, Th. Kocher claiming 93 7 per cent. and Mayo 97 8 per cent. The percentage of deaths allowed by Th. Kocher is 1·3 and by Mayo 2·2. These figures, I have no hesitation in saying, should be received with great reservation.

A more convincing report has recently been published by Judd and Pemberton.[11] Of 121 cases operated on in the Mayo Clinic in 1909, 55 were cured (24 by ligation alone), 22 were benefited but showed some slight evidence of the disease, 7 were markedly improved, 5 were only slightly improved, 8 showed little or no benefit, 21 died, 7 soon after the operation (all of hyperthyroidism). In this, the 97 8 per cent. of cures or considerable improvement has fallen to 70 per cent., but even that is, I am sure, much too high if the cases operated on are true cases of exophthalmic goitre.

In regard to this point I have read with much interest the pronouncement by Professor W. S. Halsted[12]

[10] Klose: Die Basedowsche Krankheit, Ergeb. d. Inn. Med. u. Kinderheilk., Band x., 1913.
[11] Surg., Gynec., and Obstetr., March, 1916.
[12] Harvey Lectures, 1913–14, p. 245.

who says: "The results of my experience as regards the cure of Graves's disease by one-sided lobectomy are quite at variance with the views of other surgeons." According to this eminent surgeon, who has performed "perhaps 650 operations upon about 500 patients with Graves's disease," a one-sided lobectomy has resulted in an approximate cure in possibly 60 per cent. of the cases, but in certainly more than 60 per cent. (possibly 70 or 80 per cent.) there remain symptoms of over-activity of the thyroid or thymus, or of both of these glands, sufficiently pronounced to be detected by the expert clinician. This statement carries conviction with it, and is in perfect agreement with what I have seen of the results of hemithyroidectomy. In a later communication[12] Professor Halsted refers to certain cases where even after a double lobe thyroidectomy the improvement had been so unsatisfactory that further treatment was necessary.

The frequent presence of an enlarged or persistent thymus in exophthalmic goitre suggested to Professor Garré, of Bonn, to attempt the cure by resecting the thymus gland. Those who are interested will find a full description in Professor Halsted's Harvey lecture already referred to. The case of von Haberer, in which after prolonged search he succeeded in extracting from behind the manubrium a piece of tissue 3 cm. long and ½ cm. thick, which resembled fat and seemed to contain no thymus gland, and three months later the patient was perfectly well, seems to me rather an example of *post hoc* than one of *propter hoc*.

Local Anæsthesia.

The question of general *versus* local anæsthesia is a very important one, and I am strongly of opinion that operation under local anæsthesia is much safer than under a general anæsthetic. Thomas Huntingdon thinks "we cannot escape the conviction that general anæsthesia is in a very large proportion of cases seriously at fault," and Professor Kocher advocates local anæsthesia, maintaining that a general anæsthetic adds greatly to the danger. I have had no personal experience of operation under local anæsthesia until ten months ago. I then saw two cases operated on by Dr. Dunhill, of Melbourne, and I have since seen one case operated on by Mr. Cunning. In these three cases the operation of hemithyroidectomy was successfully carried out, and the patients have done well since. I should certainly advocate local anæsthesia in future, but recently it has not been possible to procure sufficient novocaine to carry out any further operations.

It may be useful to give the following case in some detail, as showing the actual results attained in one of the hemithyroidectomies under local anæsthesia.

A girl, aged 17¾ years, was sent to see me in April, 1914, by Dr. Sutcliffe, of Margate, with a two years' history of exophthalmic goitre. She had a large goitre and extreme exophthalmos, which was very disfiguring. The heart was beating at 128 per minute and was obviously hypertrophied. She was the eldest of a family of four girls, the other three being all remarkably healthy. At the age of four she became affected with tubercle, and successively the fingers, arms, neck, face, head, feet, and legs were the seat of abscesses. She underwent 23 operations, but in the end made a good recovery, and when I saw her showed only the scars of the various incisions which had all soundly healed. She had lived off and on for the last eight or nine years at Margate and had latterly been at school, but had done little work to speak of. Naturally, having been through so many operations, she was very averse to any further surgical treatment. She had all the usual symptoms, especially those of the nervous system. She was excitable and impatient of restraint, and it was difficult to get her to keep quiet and take sufficient rest. Dr. Sutcliffe thought Margate did not suit her, and it was arranged that she should live at home near London and have medical treatment. At first she improved, gained in weight, and her heart became quieter, but the improvement was not maintained, and she not only lost the weight she had gained but an additional 9 lb. At the same time the goitre increased considerably in size. In December, 1915, she implored me to do something more to cure her. The goitre was large and locally inconvenient, and she was obviously getting worse. With my experience of the dangers of thyroidectomy in cases of this kind I felt a very serious responsibility before advising her to submit herself to operation. But thyroidectomy seemed the most likely treatment to benefit her. About this time I met Dr. Dunhill, of Melbourne, and asked him to see her with me, which he kindly did. Although not considering it to be one of the most favourable cases for operation, he agreed it would be right to give the patient the chance. The operation of hemithyroidectomy was accordingly performed on Dec. 20th, 1915, under local anæsthesia. It was completely successful. The patient stood the operation very well. It was half over before she knew that it had begun, and she expressed pleasure immediately it was over that she had not to suffer any of the disagreeable after-effects of the anæsthetics of which she had had such a large previous experience. I saw her a few days ago and she is certainly now in much better health than she had been for 18 months before the operation. One of the most striking results has been the re-establishment of the catamenia, which had been absent for some eight months before operation and previously to that had been very irregular. One cannot, however, say that a cure has been effected. I can see no difference in the exophthalmos. The heart is still acting as rapidly as before, and when I examined her the rate was 144 to the minute. But she is less restless and excitable and the outlook is much more hopeful than it was before the operation. To effect a cure the remaining lobe of the thyroid must be reduced either by further operation or other means.

My views of operative treatment are:

1. If done at all operation should be performed under local anæsthesia. Local anæsthesia is specially indicated in younger subjects.
2. Ligature of the thyroid arteries does not appear to have any appreciable effect on the disease, and therefore, if done at all, it should only be as a forerunner of thyroidectomy.
3. Thyroidectomy does not cure unless a sufficient amount of gland is removed.
4. If possible, it is better to remove more than an entire lobe at one operation. I do not think the risk will be appreciably increased if this is done.
5. If a whole lobe is left behind it is probable that another operation will be necessary at a later time, unless by means of other treatment a sufficient reduction of the remaining lobe can be brought about.

[12] Johns Hopkins Hospital Bulletin, vol. xxvi., pp. 55–57.

ON A ROSE-IRRIGATOR FOR SUPPLYING A THERAPEUTIC FLUID CONTINUOUSLY AND AT A STANDARD TEMPERATURE TO THE WHOLE SURFACE OF A WOUND.

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THE ordinary garden water-pot with a rose provides convenient apparatus for breaking up a large into a number of small streams for the irrigation of an extensive surface. But when a slow and continuous irrigation is required the device of the garden water-pot leaves us in the lurch. It has the defect that as soon as we cut down the supply the water is delivered, not, as one would wish, discontinuously in drops through all the apertures, but in a continuous stream through a single aperture. And then the water runs off in a single runnel.

The method of circumventing this difficulty has been explained in a previous communication[1] dealing with the employment of bandages for the irrigation of wound surfaces. It was pointed out there, in connexion with a stream of water carried in a bandage, that it can be divided up into as many branches as one likes by tearing the end of the bandage into tails. To apply this principle we introduce a strip of bandage into the spout of our water-pot and carry a strip to each orifice in the rose.

This is a first requirement for applying a system of irrigation to an extensive wound. For irregular hollow wounds—and wounds which are flat like a garden plot are exceptional—a further requirement is to modify the rose. For in a wound we may have to irrigate at one and the same time a vertical and a horizontal, or an upper and a lower face, or a tunnel or a number of pockets. To do this our irrigating

[1] Wright: THE LANCET, Oct. 16th, 1915.

fluid must be delivered from tubes carried forward from the face of our rose.

We fulfil this requirement by employing as our rose a perforated rubber cap, and inserting into the perforations (as was done by Carrel when he covered in his wounds with rubber sheeting, and drained off through this by suction) a set of tubes. To give stiffness to these rubber tubes, and carry them round corners, a copper wire is inserted into each. These were devices of our late colleague Captain H. H. Tanner.

Certain subsidiary improvements have here in the course of time suggested themselves. A drop counter has been introduced to tell whether the stream is flowing and to enable us to regulate the rate of flow. And the copper wires, which used to work loose and protrude, are now anchored to a rubber bung or piece of very stout drainage-tube or aluminium ring inserted into the barrel of the drop counter, or into the irrigating rose itself. (Figs. 1 and 5.) With this, so far as we can see, all the mechanical requirements of a good distributing system are satisfied, and we can now apply our therapeutic fluid over the entire surface of any wound.

Application of Different Patterns of the Irrigator to Different Types of Wounds.

The irrigator here in question may be made in different patterns to suit different requirements. In the one pattern—we call it *Mark 1* (Figs. 1, 2, and 3)—the drop-counter and rose with irrigating tubes make one piece. In the other—we call it *Mark 2* (Figs. 5 and 4)—the drop counter forms a separate element, and the irrigating rose is made as light as possible. The former pattern of irrigator is fitted up by attaching it to the splint by aluminium tape in the manner shown in the figure (Fig. 3), and where there are wounds on the posterior aspects of the limb the delivery tubes are taken round the limb and bent into position.

Where the limb is not anchored to a splint, and we have, as after amputation of a leg, to irrigate the vertical faces of a wound, we may with advantage employ the lighter pattern of irrigator, fitting it to an aluminium arm attached to a plate of perforated zinc which is bandaged down upon the limb. (Fig. 4.) With this arrangement there is no risk of the irrigation tubes becoming displaced.

Problem of Securing the Delivery of the Irrigating Fluid into the Wound at a Standard Temperature.

There yet remained another problem. It was the problem of supplying to the wound—and this, of course, is essential if it is to be treated upon physiological principles—a *therapeutic fluid*[2] maintained at such a temperature as will bring into full application the antibacterial powers of the organism. The optimum temperature for this purpose is, as experiments on emigration and phagocytosis carried out in emigration tubes teach, a temperature approximating to 40° C.

To achieve, in despite of varying external conditions, the delivery of fluid at a steady temperature of something above blood heat, a good many different factors have to be controlled. (*a*) The fluid in the reservoir must be kept constantly at the proper heat. (*b*) The loss of heat between the reservoir and the outlets of the irrigating tubes must be brought under proper control. And (*c*) the rate of flow must be so adjusted as just to cover the loss of heat and yet not flood out the wound.

(*a*) *Maintenance of the irrigating fluid in the reservoir at the proper heat.*—This is best achieved by the use of a thermos flask. A convenient way of fitting it up as an irrigating reservoir is shown in Fig. 6. For refilling the bung is removed, hot water is filled into the flask, and the temperature is adjusted by the aid of a thermometer.

(*b*) *Limitation of the escape of heat from the fluid when on passage from the reservoir to the outlets of the irrigating tubes.*—Experiment shows that there is an important and irregular loss of heat when the fluid is conveyed to the irrigator through a long length of thin-walled tubing; that this evil is exaggerated with wide-bored tubing, for then fluid lies waiting for passage; and again that the evil is further increased when the regulating screw clamp is applied in the region of the reservoir instead of in the region of the irrigator, for then we have waiting in the tube a body of already cooled water instead of a body of hot water. And again experiment shows that there is an important and irregular loss of heat in the drop chamber when this is too large.

So that the following points must be attended to. The size of the drop counter chamber must be cut down. We must employ a thick-walled and narrow-bored rubber tubing, taking care that it is not too thick-walled or too narrow-bored to interfere with the delicate regulation of the flow of water by our screw clamp. And when our tubing has too thin walls or too wide a bore, we must cut down the length of the tube, and be careful to apply the clamp at its distal end.

We find that an almost absolutely accurate regulation can be obtained by employing a two-foot (i.e., $\frac{2}{3}$ metre) length of $\frac{2}{3}$ inch (9 mm.) external and $\frac{1}{3}$ inch (5 mm. internal diameter, and applying the screw-clamp about two or three inches above the irrigator.

(*c*) *Regulation of the rate of flow.*—This is done by the screw-clamp, timing the rate of dropping by the drop-counter. For accurate regulation it is, of course, essential to have drops of fixed size. We obtain these by regulating the external diameter of the dropper, the size of the drops being, of course, determined by the extent to which they cling round the outside of the tube. The standard size we have chosen for the dropper is one of 4 mm. external diameter, obtained by inserting the drawn-out glass tube into a hole in the perforated zinc which is supplied to hospitals, and filing and breaking off the point at the level where it is nipped by the aperture. In the case of a medium wound we may adjust the flow at 90 to 100 drops; in a larger wound at 110 to 120 drops; and in a still larger wound at 130 to 140 drops per minute.

The table below gives the temperatures at which the fluid in the reservoir (thermos flask) must be maintained to give, in connexion with the three rates of flow just specified, and the other conditions particularised above, delivery in the wound at a temperature of 39° to 40° C. (102° to 104° F.).

Rate of flow in number of drops per minute.	Temperature which must be maintained in the reservoir to obtain delivery at 35° to 40° C.
90 to 100	75° C. (167° F.)
110 to 120	73° C. (163° F.)
130 to 140	71° C. (160° F.)

Method of satisfying oneself that the irrigator is in good working order and is delivering fluid at the proper temperature.—The essential points to look to are the following: (*a*) We must see that the fluid is being delivered from the outlets of all the irrigating tubes. If this condition is not satisfied we must remove the rubber rose and see that a strip of bandage is inserted into the orifice of each tube. We must also, to prevent the tubes becoming blocked with grit, periodically see to the renewal of the gauze filter which lies upon the floor of the drop counter. (*b*) We must see that the arrangements for regulating the flow are functioning properly. It will be found in some cases that the walls of the tubing gradually yield to the pressure of the screw clamp, with the result that the rate of flow is gradually retarded. This condition can often be remedied by boiling the rubber tube. If this does not suffice, a wider-bored and thinner-walled tubing must be employed. (*c*) We must—for the wound surface is insensitive to temperature—see that the irrigation system delivers the fluid at the required temperature. We do this by collecting all the delivery tubes into an empty test-tube, kept warm by immersion in a bowl of water at blood heat, and explore the temperature with a clinical thermometer.

Method of carrying off the irrigation fluid from the wound, and preventing it leaking away into the bed.—The carrying off of the irrigation fluid and the keeping of the bed dry are not the very difficult things they have been supposed to be. Where the limb is lying horizontally, and a segment of the mattress has been taken out from under it, a broad strip of jaconet can be passed under the limb and the corners can be looped up and tied round the limb above and below the wound. A kind of hammock is thus formed. In combination with this strips of bandage are employed to drain the

[2] The italics here are intended to suggest to consideration that while the regulation of the temperature must in connexion with an irrigating fluid employed to incite physiological reactions be of dominating importance, such regulation need not therefore be imperative when we are irrigating only with a view to achieving antiseptic effects. And it may in this connexion be pointed out that it is doubtful whether physiological requirements in the matter of temperature could be conformed to when irrigating with hypochlorite antiseptics. For experiments—suggested to us by our fellow-worker, Major G. Dreyer—have shown that both eusol and Dakin's fluid very rapidly lose antiseptic potency when kept warm, even when kept at a temperature of blood heat.

FIG. 1. FIG. 2. FIG. 3.

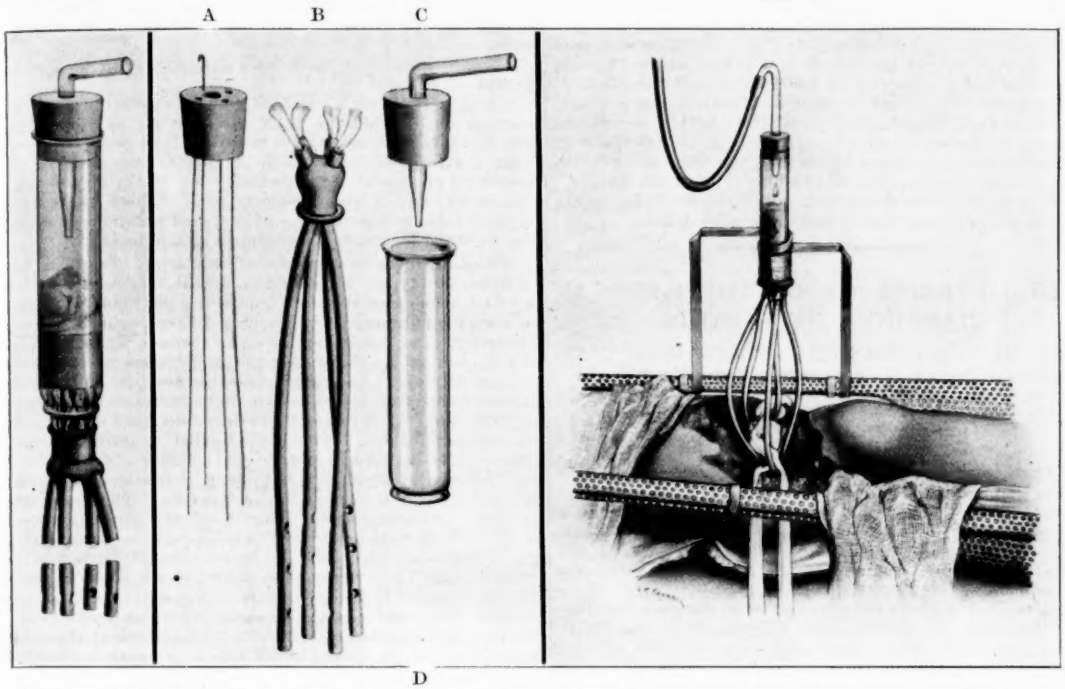

FIG. 1.—Rose-irrigator, Mark 1, showing the drop-counter, gauze filter, and bung for anchoring the copper wires in position. The rubber cap has been dislodged to show the strips of bandage in its interior.

FIG. 2.—Rose-irrigator, Mark 1, showing the component parts. A, The perforated rubber bung into which the copper wires are inserted. B, The rubber cap everted to show the method in which the outlet tubes and the strips of bandage are inserted. C and D, The drop-counter and glass barrel.

FIG. 3.—Showing the irrigating rose, Mark 1, fitted to a splint and the arrangement of the outlet tubes and bandage siphon drains.

FIG. 4. FIG. 5. FIG. 6.

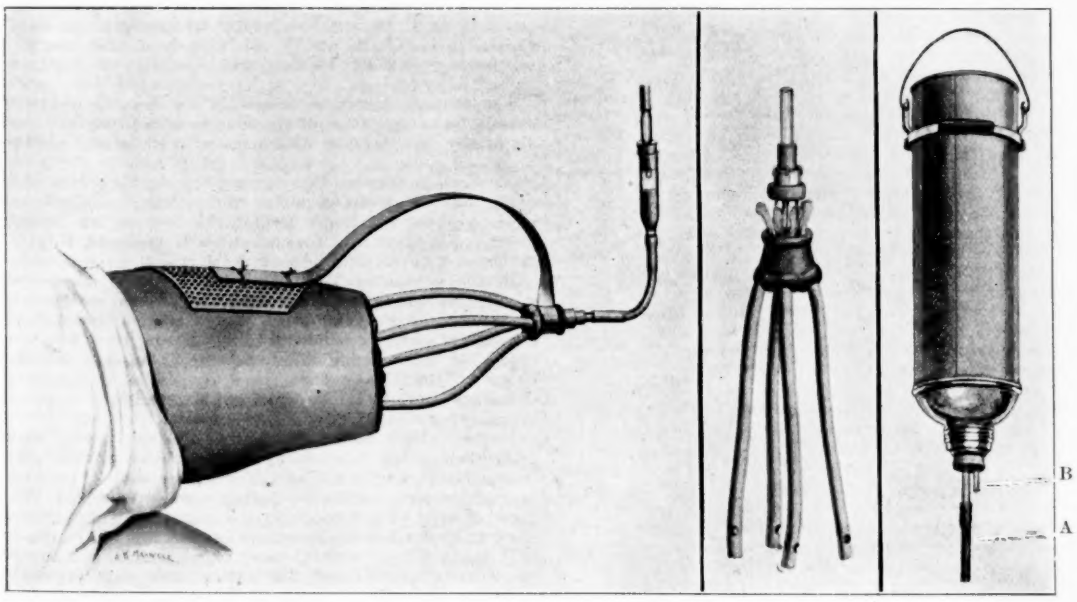

FIG. 4.—Showing the method of fitting the irrigating rose, Mark 2, to an amputated limb.

FIG. 5.—Irrigating rose, Mark 2. The rubber cap is dislodged to show the strips of bandage in its interior.

FIG. 6.—Thermos flask fitted up as an irrigating reservoir. A, Outlet for fluid; this is connected up with the rubber delivery tube. B, Inlet for air; this tube is carried up above the level of the fluid.

wound. In such a case as that shown in Fig. 3 these bandages function as siphons and pass down round the limb In wounds in dependent positions the bandages would be employed as direct drains. And in either case they pass out through a hole cut out in the trough of the jaconet hammock and go down into a basin placed under the bed.

When the limb cannot be kept in the horizontal position, or where from the anatomical relations of the wound the jaconet hammock is inapplicable, we can, as explained in a previous communication,[3] bank back the fluid, and effectually prevent leakage into the bed by "irrigation flanges," built up of cotton-wool covered and fastened down to the skin by strips of bandage soaked in formalin gelatin.

THE BACTERIOLOGY OF THE FÆCES IN DIARRHŒA OF INFANTS.

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THE research on which this paper is based was carried out in the summer of 1912 and in the following winter. It was not intended to publish this portion till the work had been carried to a more complete issue. In the present unsettled state of affairs, however, it is considered advisable to use a leave of absence to prepare the following preliminary communication.

The method of study as suggested by Professor J. Ritchie, superintendent of the Research Laboratory of the Royal College of Physicians of Edinburgh, was to make as complete an examination as possible of the intestinal flora of healthy infants and of those suffering from diarrhœa, the differences between the two groups being likely to furnish data bearing on the etiology of infantile diarrhœa.

It was found that the flora of healthy infants varied widely according to the method of feeding, the flora of breast-fed infants differing from that of artificially fed.

In my first paper on these experiments (1914[1]) the flora of 21 infants who were free from diarrhœa was dealt with. Eighteen specimens from 14 cases of diarrhœa were partly described. In that paper the scheme of routine examination was given in detail; the same scheme was applied to the cases described in the present paper. Briefly, the method consisted, on the microscopic side, of differentiating the organisms present by means of Gram-stained films. For cultures, from broth emulsions MacConkey plates for the recognition of lactose and non-lactose fermenters were prepared; ordinary agar plates were used for the coccal forms, and for anaerobic bacteria glucose broth, of ordinary reaction or acidified, and milk were employed. After the primary isolation was effected, the organisms obtained were subjected to various further tests. The characters of the "acid-tolerant" and "lactose-fermenting" groups of bacteria, the cocci and the spore-bearers, as isolated both from normal and diarrhœa cases, were fully gone into in the first paper. The conclusion was come to that these groups of organisms were not causal agents of infantile diarrhœa. The "non-lactose-fermenting" group of bacilli, on the other hand, so much more numerous in the fæces of diarrhœa cases, was left for description which is now given below.

The cases of diarrhœa were infants and young children who were patients at the Royal Hospital for Sick Children, Edinburgh. The majority were inmates of Charteris Ward, and I was able to study them through the kindness of Dr. J. S. Fowler. It is important to note that they occurred during the cold and wet summer of 1912, and in the autumn and winter following. Specimens were taken on one or more occasions from 14 cases. Table I. shows the main differences between the intestinal flora of healthy children and of those suffering from diarrhœa. The average findings of 21 normal children under the different diets (A, B, and C) are given at the foot of the table to facilitate comparison. As pointed out in the first paper, the acid-tolerant group greatly predominates over the others in the flora of breast-fed infants, the B. coli group and cocci being present in small numbers, while spore-bearers are unimportant. In children on artificial diet the acid-tolerant group is somewhat reduced, the other groups are relatively increased, and members of the non-lactose-fermenting group begin to make their appearance.

The diarrhœa cases have been divided into three clinical groups.

Group I. contains 2 cases of very mild diarrhœa. Both were on diet C, which in their case meant "anything that was going." Comparing their intestinal flora group by group with that of healthy children on diet C one observes no important change from the normal. No bacilli of the non-lactose-fermenting group were isolated. These cases were evidently due to unsuitability of diet and scarcely come into the class of case which is the subject of this research.

Group II. includes 5 cases of fairly severe diarrhœa, not of dysenteric type. Four were on diet B, one on diet B plus a small amount of diet C. Comparing their flora with that of normal children on diet B striking differences are observed. In the diarrhœa cases there is (i.) an increase in numbers of the B. coli group, (ii.) a decrease in numbers of the acid-tolerant group, (iii.) a great increase in numbers of the non-lactose-fermenting group, (iv.) a slight increase in numbers of cocci, and (v.) no increase, possibly a decrease, in numbers of the spore-bearers. The cocci tended to grow in longer chains than in normal stools. This change is analogous to the tendency of diplococci to grow in chains in fluid media, and is probably secondary to the diarrhœa. The characters of the B. coli are given in Table X. of the previous paper, tests of their pathogenicity to guinea-pigs in Table XII.; the types were the same as those isolated from normal children, and their virulence to guinea-pigs was not exalted. Therefore, apart from the increase in numbers of the normal B. coli, the chief change in these diarrhœa cases is the presence in considerable numbers of members of the non-lactose-fermenting group, along with a decrease in numbers of the acid-tolerant group.

Group III. contains 7 cases of severe ileocolitis, which, clinically speaking, might be classed as dysenteries. The changes in this group are the same as those observed in Group II., but more marked. Again cocci were numerous, especially as cocci in chains, B. coli were normal in type and increased in numbers, spore-bearing bacilli very scanty or absent. For the character of members of these groups reference must again be made to the previous paper. The noteworthy change was a great increase of the non-lactose-fermenting group and a great decrease of the acid-tolerant group. In one case no members of the former group were isolated, but B. proteus was present in very large numbers. Cases XLII., XLIV., and XLVI. were fatal, and from the two latter were isolated unagglutinable strains of dysentery bacilli.

The changes from the normal in the flora of diarrhœa cases is an exaggeration of the changes seen in the stools of artificially fed infants as compared with those on the breast.

The non-lactose-fermenting group of bacilli.—Into this group fall all Gram-negative bacilli, morphologically of coliform type, which do not ferment lactose nor liquefy gelatin. The best-known members are B. typhosus, B. paratyphosus A and B, and the various types of B. dysenteriæ.

In the summers of 1902 and 1903, a large number of workers in America, chiefly under the director of Flexner (1904[2]) at the Rockefeller Institute, examined the stools of a series of cases of epidemic infantile diarrhœa, with the object of determining the presence or absence of the dysentery bacillus. They were successful in isolating dysentery bacilli, chiefly of the Flexner-Harris type, in about 63 per cent. of the stools examined.

Between 1905 and 1908, Morgan (1906[3]), along with Ledingham (1909[4]), made extensive studies of the non-lactose-fermenting bacilli isolated from the stools of children in England suffering from epidemic summer diarrhœa. He found Morgan's No. 1 bacillus to be as prevalent in diarrhœa cases in England as the dysentery bacillus was in America—that is, in 63 per cent. of cases; that the sera of many of these cases agglutinated the bacillus, and that diarrhœa could be produced in monkeys by feeding them with this organism. He found also that other types of non-lactose fermenters were much more common in diarrhœa cases than in normal.

From 1910 onwards Lewis (1911,[5] 1912,[6] 1914[7]) in Birmingham has made a careful study of this group of

[3] Loc. cit.

TABLE I.

Case number.	Month.	Age.	Feeding.	Diarrhœa.	Vomiting.	Motion.				Lactose-fermenting group (B. coli).	Acid-tolerant group (B. acidophilus, &c.).	Non-lactose-fermenting group (Morgan's bac., &c.).	Cocci (enterococcus, &c.)	Spore-bearing bacilli (B. enterit. sporog., &c.).	Suspicious organisms isolated.	Case group.
						Colour.	Consistence.	Blood.	Mucus.							
XVII., C	Aug.	1 yr. 9 mos.	Mixed.	+	+	Brown.	Semi-solid.	—	—	+++	++	—	++	—	...	Diarrhœa, Group I., Slight cases.
XVIII., C	,,	1 yr. 4 mos.	,,	+	+	Yellowish green.	,,	—	—	+++	+	—	++	—	...	
XIX., B	Aug.	4½ mos	Bottle. Cow's milk and water.	++	—	Pale green.	Soft.	—	—	++++	+	+	+	—	Organism of Group I. Lewis.	Diarrhœa, Group II. Fairly severe cases.
XX., B	,,	6 ,,	Bottle.	+	+	Greenish.	Loose.	—	—	++++	+	++	++	—	Bacillus like Shiga, but motile.	
XXI., B + C.	,,	11 ,,	Bottle. Cow's milk and porridge, milk puddings, &c.	++	++	,,	,,	—	—	++	++	++	+	—	Morgan's No. 1 group.	
XXIV., B	Nov.	5 ,,	Bottle. Cow's milk and water.	++	++	,,	Very loose.	—	—	++++	+	+	+	—	,,	
XXIX., B	Oct.	4 ,,	Bottle.	++	++	Olive-green.	Slimy.	—	+	++++	+	+	++	—	,,	
X., B	June.	3 mos.	Bottle.	++	++	Brown.	Loose, stringy.	+	?	+++	±	—	+	—	B. proteus in large numbers.	Diarrhœa, Group III. Severe cases of dysenteric type.
XXXIII., C + B	Oct.	4 yrs.	Milk diet (nephritis) at time of onset of diarrhœa.	++	—	?	Loose.	+	+	++++	+	+	+	—	Bacillus like Flexner, but motile.	
XLI., B + C	Nov.	10 mos.	Breast 8 mos., then milk, boiled bread, porridge, &c.	++	—	Greenish.	Very loose.	+	+	++++	±	+	++	—	Morgan's No. 1 group.	
XLII., B	,,	13 ,,	Breast-fed 12 mos. Then cow's milk.	++	—	Brownish.	Loose, stringy.	+	+	++++	+	++	++	+	,,	
XLIII., B	,,	8 ,,	Bottle. Cow's milk and water.	++	—	?	Slimy.	+	+	++++	±	++	++	—	,,	
XLIV., B	,,	5 ,,	Bottle. Cow's milk and water.	++	—	Greenish.	,,	—	+	++++	±	++	++	—	B. dysenteriæ type. Flexner Y.	
XLVI., C	Jan.	16 ,,	Mixed diet.	++	—	?	Loose.	+	+	++++	+	++	++	—	,,	
A	...	First year.	Breast.	Healthy		Normal.				+	++++	—	+	±	Healthy breast-fed. Average of 6 cases.	
B	...	,,	Bottle. Cow's milk and water.	,,		,,				++	+++	∓	+	±	Healthy bottle-fed. Average of 12 cases (5 bottle and breast).	
C	...	Second year.	Cow's milk, puddings, porridge, &c. = Mixed diet.	,,		,,				+++	++	±	++	+	Healthy on mixed diet. Average of 3 cases.	

The letters A, B, C after case number indicate nature of diet.

organisms. In the cold summer of 1910, is which the outbreak of summer diarrhœa was slight, he found non-lactose-fermenting bacilli in 77 per cent. of diarrhœa cases, and in 14 per cent of normal; nearly half of these were Morgan's No. 1 In 1911, in which there was a serious outbreak of summer diarrhœa he found non-lactose fermenters in the stools of 95 per cent of children suffering from diarrhœa, and of 38 per cent. of children not suffering from diarrhœa. The great majority of these were of the type of Morgan's No. 1. He found this bacillus to be more pathogenic to mice by feeding than were the other members of the non-lactose-fermenting group; but that the strains of Morgan's No. 1 isolated from normal cases were fully as virulent as those isolated from cases of diarrhœa. He established by agglutination tests that Morgan's No. 1 bacillus was in reality a group of organisms. He proved that Morgan's No. 1 bacillus, isolated from normal children, from milk or from mice, may exhibit agglutination reactions identical with those of Morgan's No. 1 bacillus isolated from diarrhœa cases. In 1910 he found bacilli with the characters of the Flexner type 11 times in 47 cases of diarrhœa (23 per cent.). In the summer of 1911, in 175 specimens of fæces from 140 cases of diarrhœa, bacilli with the cultural characters of the dysentery group were isolated on 10 occasions only (7 per cent.).

In America, therefore, the type of non-lactose fermenter prevalent in cases of epidemic summer diarrhœa has been shown to be the dysentery group, while in England it is the gas-producing group known as Morgan's No. 1.

Table II. gives the reactions, &c., of the non-lactose-fermenting bacilli isolated from my series of specimens. In this table the fermentation of the sugars is given as read off at the end of one week's incubation; the change in milk as at the end of a fortnight's incubation; the indol reaction as at the end of a week's incubation in peptone water, Ehrlich's test being used. Motility was tested at the end of four to six hours' incubation in ordinary broth; the effect on gelatin was observed for three months at room temperature. Agglutination tests were done by the macroscopic method, living cultures being used. The paratyphoid and dysentery sera came from Berlin, and were kindly given me by Dr. F. E. Reynolds. The Morgan's No. 1 serum was prepared from rabbits by increasing doses of killed cultures of strain XLIII 6.

All these cultures were put through the series of tests a second time at the end of three to six months' growth on artificial media. All organisms gave identical results at both testings, except organism XXXIX. 2, which at the first testing left dulcite untouched, but at the second fermented it with gas production.

Organisms XLI. 10 and 11, which were liquefiers of gelatin, do not belong to this group of organisms, but are included for comparison.

Bacilli of the non-lactose-fermenting group were isolated from 6 out of 21 infants and young children who were free from diarrhœa (28·5 per cent.). Bacilli of this group were isolated from 11 out of 14 cases of diarrhœa, or 78·5 per cent. If one eliminates the two rather doubtful cases of diarrhœa, XVII. and XVIII., the percentage becomes 91·6.

The non-lactose-fermenters isolated may be divided for discussion into (1) the Morgan's No. 1 group; (2) the dysentery and "dysentery-like" group; and (3) the "paratyphoid-like" group.

Morgan's No. 1 bacillus was obtained from 2 out of a total of 21 normal children examined—that is, from 9 per cent. It was obtained from 5 of 14 children suffering from diarrhœa, or 35 per cent. Reference to the table will show that one of the strains isolated from a normal child was agglutinated by serum XLIII 6; the other was not. Strain XLIII. 6, as mentioned before, was derived from a case of diarrhœa. A strain isolated from another case of diarrhœa was also agglutinated by this serum as well as the homologous organism, while strains from three other diarrhœa cases were not. This is in accordance with Lewis's observations, already referred to, as to the occurrence of members of definite cross-agglutinating subgroups of Morgan's No. 1 bacillus in both normal and diarrhœa specimens. Further reference to the table will show that a Morgan's No. 1

bacillus from a diarrhœa case may be fatal to a guinea-pig, while another strain also from a diarrhœa case, and agglutinable by the same serum, may prove non-fatal in exactly the same dose. A large dose of a strain from a normal case was rapidly fatal to a guinea-pig. It will be noted that Morgan's No. 1 bacillus was isolated both from cases of diarrhœa, Group II., and from the severe type of ileo-colitis, Group III.

There was therefore an increase of the Morgan's No. 1 group in cases of diarrhœa, but identical members of the group, agglutinated up to titre by the same serum, were obtained both from diarrhœa cases and from a child who was at the time, had been, and continued to be, free from diarrhœa.

Dysentery and "dysentery-like" bacilli.—Bacilli classed as true dysentery bacilli, although inagglutinable by the stock Flexner and Y sera, were obtained from no healthy cases, but were found in 3, or 21 per cent., of diarrhœa cases. Two other bacilli, resembling dysentery bacilli in reactions, but motile, were isolated from diarrhœa cases.

Three strains of true dysentery bacilli were of the Flexner-Y type in cultural reactions. The children from whom they were obtained had truly dysenteric symptoms, and two of them died. The strains were all highly pathogenic to guinea-pigs. There is little question that these were cases of infantile bacillary dysentery analogous to the American cases referred to. These cases are described in more detail below.

The organisms isolated from Cases XX. and XXXIII. were in some respects akin to the dysentery group, but both were motile. Recently it has been claimed that a true dysentery may be produced by motile "dysentery-like" bacilli such as these, but further evidence is necessary.

The "paratyphoid-like" bacilli.—No true paratyphoid bacilli were isolated from any case, but "paratyphoid-like" bacilli were isolated from three cases free of diarrhœa, and one, XXXIX. 2, from a case during convalescence from diarrhœa.

The strains from normal cases resembled B. para. B in size of colonies on plates and in heaviness of growth on agar slopes, but in action on litmus milk resembled B. para. A. Two of them were non-motile in four hours old broth cultures, which is not uncommon with B. para. B, but in my experience very

TABLE II.

Case number.	Organism number.	Pathogenicity. Lactose.	Glucose.	Mannite.	Dulcite.	Saccharose.	Salicin.	Motility.	Indol.	Litmus milk.	Gelatin.	Agglutination.	Animal.	Medium of culture.	Age of culture.	Amount of culture.	Mode of inoculation.	Result.	Identity.	Case group.
XV.	1, 2,	—	A.G.	—	—	—	—	+	+	Alk.	N.L.	Agglutinated up to titre by serum XLIII. 6.	G.-p.	Agar slope.	24 hr.	½ slope.	Intraperit.	Fatal.	Morgan's No. 1.	From cases without diarrhœa.
XXXI.	3, 4	—	A.G.	A.G.	A.G.	—	—	+	+	A.	N.L.	Negative para. A, para. B., and Gaertner sera.	,,	Broth.	,,	2 c.c.	,,	Not fatal.	Paratyphoid-like.	
XXXII.	1	—	A.G.	A.G.	—	—	—	+	+	A.	N.L.	Negative serum XLIII. 6.	,,	,,	,,	,,	,,	Fatal.	Group H, Lewis's classification.	
XLVIII.	1	—	A.G.	A.G.	A.G.	—	—	+	+	A.	N.L.	Negative para. A, para. B, and Gaertner sera.	,,	,,	,,	1 c.c.	,,	,,	Paratyphoid-like.	
XLIX.	1	—	A.G.	A.G.	A.G.	A.G.	—	+	+	A.	N.L.	,,	,,	,,	,,	2 c.c.	,,	,,	Group J, Lewis's classification.	
L.	2	—	A.G.	A.G.	A.G.	—	—	+	+	Alk.	N.L.	,,	,,	,,	,,	—	—	,,	Morgan's No. 1.	
XIX.	3, 4	—	A.G.	A.G.	A.G.	—	A.G.	—	+	—	N.L.	—	G.-p.	Agar slope.	24 hr.	½ slope.	Subcutan.	Not fatal.	Group I., Lewis.	From diarrhœa cases.
XX.	3, 5	—	A.	—	—	—	—	+	—	Alk.	N.L.	—	G.-p.	—	24 hr.	—	Subcutan.	Not fatal.	Shiga-like, but motile.	
XXI.	1	—	A.G.	—	—	—	—	+	+	,,	N.L.	Negative serum XLIII. 6.	Mouse.	Broth.	,,	5 days.	Fed.	,,	Morgan's No. 1.	
	2												G.-p.	Agar.	,,	2 c.c.	Intraperit.	,,		
	4												Mouse.	Broth.	,,	—	Fed.	,,		
	5												G.-p.	Agar.	48 hr.	1 slope.	Subcutan.	,,		
XXII.	6	—	A.G.	—	—	—	—	+	+	,,	N.L.	Agglutinated up to titre by serum XLIII. 6.	,,	,,	,,	—	,,	,,		
XXIV.	5	—	A.G.	—	—	—	—	+	+	,,	N.L.	Not agglutinated by serum XLIII. 6.	,,	,,	,,	—	,,	,,		
XXV.	6	—	A.G.	—	—	—	—	+	+	,,	N.L.	,,	,,	,,	,,	—	,,	,,		
XXXIII.	22, 23	—	A.	A.	—	—	—	—	+	Slightly alk.	N.L.	Negative, Flexner and Y sera.	Mouse.	Broth.	24 hr.	5 days	Fed.	Fatal.	Flexner-like, but motile.	
XII.	4	—	A.G.	—	—	—	—	+	+	Alk.	S.L.	—	G.-p.	Agar.	,,	1 slope.	Subcutan.	,,	Like Morgan's No. 1 but slow liquefaction of gelatin.	
XLII.	10	—	A.G.	—	—	A.G.	—	++	+	,,	S.L.	Negative serum XLIII. 6.	G.-p.	Broth.	24 hr.	2 c.c.	Intraperit.	Not fatal.	Slow and slight liquefier.	
XLIII.	11	—	A.G.	—	—	—	—	++	+	,,	N.L.	(Serum prepared from rabbits with XLIII. 6 titre 1 6000.	,,	,,	,,	,,	,,	Fatal.	Morgan's No. 1.	
XLIII.	5	—	A.G.	—	—	—	—	+	+	,,	N.L.	XLIII. 4 agglutinated to titre.	5 mice.	Agar slope.	,,	1/50 to 1/20 slp.	Subcutan.	Not fatal.	,,	
XLIV.	1	—	A.	A.	—	—	—	—	—	,,	N.L.	Negative, Flexner and Y sera.	Mouse.	Broth.	,,	5 days.	Fed.	Fatal.	Dysentery, not agglutinating.	
XLVI.	4	—	A.	A.	—	—	—	—	—	,,	N.L.	Negative, Flexner and Y sera.	G.-p.	,,	,,	2 c.c.	Intraperit.	,,	,,	
	1, 2												G.-p.	,,	,,	1 c.c.	,,	,,		
XXXIX.	1, 3	—	A.G.	—	—	—	—	+	+	Alk.	N.L.	—	—	—	—	—	—	—	Morgan's No. 1.	Later examination of Case XXIX., diarrhœa.
XLV.	2	—	A.G.	—	—	—	—	+	—	,,	N.L.	Negative, Flexner and Y sera.	G.-p.	Broth.	24 hr.	2 c.c.	Intraperit.	Fatal.	Paratyphoid-like.	
	2	—	A.	—	—	—	—	—	—	,,	N.L.		,,	,,	,,	1 c.c.	,,	,,	Dysentery. Not agglutinating.	

G.-p. = guinea pig; — In all columns up to gelatin indicates that test gave a negative result; — in columns after gelatin indicates that test was not carried out; N.L. = non-liquefier; Sl.L. = slow liquefier.

rare with B. para. A. They were not agglutinated by paratyphoid or Gaertner sera, and showed a moderate degree of pathogenicity to guinea-pigs. The other strain, XXXIX. 2, was peculiar in not fermenting dulcite at the first testing, but in having all the reactions of B. para. B or B. Gaertner at the second testing, five months later. In our examinations of Dardanelles troops at the M.E. laboratory under Captain Archibald, R.A.M.C. (1916[8]), one of our greatest difficulties was the distinction between true paratyphoid bacilli and harmless "paratyphoid-like" bacilli. Fifteen such inagglutinable strains were obtained by blood culture from cases of undoubted paratyphoid fever. In infants such organisms are in like manner a source of difficulty, but in the present series of cases appeared to be unconnected with the diarrhœa.

Other non-lactose-fermenting bacilli of Groups H and J (Lewis) were obtained from normal cases, while a bacillus of Group I. was obtained from a diarrhœa case.

Observations of a ward epidemic of diarrhœa.—The mode of incidence of the following six cases is of interest.

Case XLI. was admitted to a ward in the beginning of November, 1912. From a specimen examined on Nov. 3rd bacilli resembling Morgan's No. 1, save that they liquefied gelatin, were isolated.

Case XLIII. had been admitted to this ward in September suffering from empyema (XXXI.). She was then free from diarrhœa, and a "paratyphoid-like" bacillus was isolated from the stool. On Nov. 16th she developed acute diarrhœa with blood and mucus. From a specimen Morgan's No. 1 bacillus was isolated. A highly agglutinating serum was prepared from strain XLIII. 6.

Case XLII. was admitted to the ward on Nov. 5th suffering from lobar pneumonia. On Nov. 18th she developed acute diarrhœa with blood and mucus in the stools. On Nov. 19th Morgan's No. 1 bacillus was obtained from a specimen. The child died on Nov. 23rd. The Morgan's No. 1 bacillus from this case was not agglutinated by serum XLIII. 6, and therefore did not belong to the same subgroup of the Morgan's No. 1 group.

Case XLIV. was admitted to the ward on Nov. 13th. On Nov. 19th very severe diarrhœa with passage of blood and mucus started. On Nov. 24th an inagglutinable dysentery bacillus of Flexner-Y type was isolated. The child died on Nov. 25th.

It will be observed that in these four cases, all in the ward at the same time, and three of them starting acute diarrhœa within a period of three days, *the non-lactose-fermenters isolated were different in each case.*

Another case (XXIX.) was admitted to the ward in October suffering from diarrhœa. On Oct. 15th Morgan's No. 1 bacillus was isolated from her fæces. On Oct. 30th she was convalescent, and a second examination at this date again produced Morgan's No. 1 bacillus, along with a "paratyphoid-like" bacillus (XXXIX.). In the latter part of November and in December she had another very severe bout of diarrhœa, but a specimen was not examined during this period. On Jan. 6th she had completely recovered and from her stool at this date (specimen XLV.) was isolated a dysentery bacillus, inagglutinable, with Flexner-Y reactions. This child was in the ward at the same time as Case XLIV., from whom a similar organism was isolated.

The last case of this series, XLVI., was admitted to the ward in December, suffering from chronic diarrhœa, along with an ischio-rectal abscess. Towards the end of December his diarrhœa became very acute and of dysenteric type. On Jan. 6th a dysentery bacillus, inagglutinable, with Flexner-Y reactions, was isolated from his stool. The child died on Jan. 9th.

It is reasonable to suppose that the cases from which specimens XLIV., XLV., and XLVI. were obtained were (1) infected one from the other, or (2) infected from a common source. When specimen XXXIX. was obtained from the second child her flora was still of the diarrhœa type and harboured Morgan's No. 1 bacillus, and was therefore probably less protected against the onslaught of a dysentery bacillus. That this child was still harbouring a dysentery bacillus after complete recovery from diarrhœa directs attention to the carrier problem in dysentery of infants as well as of adults.

The cases XLI. to XLIII. still remain a puzzle. They occurred in apparently epidemic form, and yet the non-lactose-fermenter isolated was different in each case. Is the explanation possibly that Cases XLI. to XLIII. were suffering from true dysenteric infection, but that the secondary overgrowth in the intestine of other non-lactose-fermenters had concealed the presence of the dysentery bacilli? Is it that there are several varieties of non-lactose-fermenters which are capable of producing a diarrhœa or even an inflammation or ulceration of the intestine? Or does a common cause produce conditions in the intestine permitting the overgrowth of non-lactose-fermenters as a result rather than a cause of the diarrhœa? It is impossible without further research to answer these questions.

I would again lay stress on the differences between the flora of breast-fed children and of children on artificial diet, and on the exaggeration of the same differences when one proceeds further to the flora of children suffering from a diarrhœa. In my first paper it was pointed out how completely the acid-tolerant group is able to outgrow the non-lactose-fermenting group in a medium containing lactose or glucose, the acid produced by the splitting of the sugar rapidly killing off the latter group of organisms. It is possible that the acid-tolerant group plays a beneficent part in restricting the growth of these organisms, and that any cause, chemical or otherwise, which inhibited the growth of the acid-tolerant group might set up a diarrhœa by thus permitting an overgrowth of members of the non-lactose-fermenting group. Further work on these lines is desirable, and the relative immunity to diarrhœa of breast-fed children should be taken as a starting-point.

Summary.—Fourteen cases of diarrhœa were all on artificial diet at the time of onset. The flora of artificially fed infants differs from that of breast-fed infants chiefly in a decrease of the acid-tolerant group, an increase of the normal B. coli group, and in the appearance of members of the non-lactose-fermenting group along with some increase of cocci. The flora of infants suffering from diarrhœa shows similar but more marked changes, and the more severe the diarrhœa the more marked the changes. It is probable that the acid-tolerant group exerts a beneficent influence in restraining the growth in the intestine of the non-lactose-fermenting group.

Bacilli of the non-lactose-fermenting group were obtained from 6 out of 21 (28·5 per cent.) infants and young children who were free from diarrhœa. Bacilli of this group were isolated from 11 out of 14 cases of diarrhœa (78·5 per cent.). Bacilli of Morgan's No. 1 group were isolated from 9 per cent. of the normal children, and from 35 per cent. of the cases of diarrhœa.

True, though non-agglutinable, dysentery bacilli were isolated from none of the normal children, but were obtained from three cases of diarrhœa with blood and mucus (dysentery), or 21 per cent. of total diarrhœa cases. A certain number of cases of diarrhœa of infants are therefore true bacillary dysenteries, even in Scotland and in winter-time.

It is doubtful whether the overgrowth of non-lactose-fermenting bacilli initiates the diarrhœa, or whether it is a secondary and aggravating factor.

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AN IMPROVED OPERATION FOR INTRINSIC MALIGNANT DISEASE OF THE LARYNX.

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IN February last I demonstrated an improved operation for the removal of malignant growths of the vocal cords, and in April I described the method more fully in the *Journal of Laryngology*. The improvement consisted essentially in removing a portion of the laryngeal cartilages on the affected side. The steps of the operation are briefly as follows.

The larynx and the upper rings of the trachea are exposed through the usual vertical median incision and a tracheotomy tube is inserted. Then the soft tissues and perichondrium are turned off the thyroid cartilage on the affected side; the crico-thyroid membrane and the ring of the cricoid are laid bare. Next, if desired, thyrotomy is performed by splitting the thyroid cartilage in the median line in the usual way. By gentle traction on the margins of

the opening thus made the interior of the larynx can be inspected and the nature and extent of the growth seen. With strong cutting forceps the growth, with a sufficient margin of healthy tissue, is now cut away, together with the overlying cartilage in one piece. The taking away of the cartilage together with the underlying soft parts ensures not only a more thorough removal of the growth, but gives a much better view of the parts which are being divided, and much freer access for the use of instruments in the interior of the larynx.

The thyrotomy is not always necessary. When it is known that the growth is malignant and that it is limited to one vocal cord there is no need to split the thyroid. With a small saw the thyroid cartilage is divided in the median line from its lower edge upwards nearly to the upper margin. A transverse incision is then carried backwards just below the upper edge of the thyroid, nearly to the posterior border, and then downwards just in front of the posterior border. The square piece of cartilage thus marked out is removed, and subsequently the larynx is opened by dividing the underlying soft parts.

The following advantages were claimed for the operation.

1. It ensures more thorough removal of the disease by giving a free view of the parts to be removed, as well as by taking away the overlying cartilage
2. The operation is rapid and easy.
3. Bleeding is easily controlled and the great danger of the operation—blood entering the air-passages and causing difficulty with the anæsthetic and subsequently septic pneumonia—is avoided.
4. After the operation the patient is able to swallow without difficulty or pain, which is not always the case with thyrotomy when there has been much wrenching apart of the cartilages.
5. Healing is rapid, and there is no subsequent necrosis of a fragment of cartilage, such as occasionally follows an ordinary thyrotomy.
6. The after-results as regards the voice are excellent and there seems no danger of subsequent larnygeal stenosis.

The advantages of this method, and more especially that of being able to see plainly the parts which are being divided and thus of being able to arrest immediately every bleeding point, have led me to simplify the operation. As all hæmorrhage can be immediately arrested the preliminary tracheotomy is obviously a useless and unnecessary complication. Being able to dispense with tracheotomy the usual vertical incision down the front of the neck can be replaced by a curved transverse incision. The advantages of the transverse incision, both with regard to rapidity of healing and the subsequent cosmetic effect, need hardly be mentioned. The transverse incision gives a better view of the parts to be removed and heals with hardly any scarring or puckering. Also, it is more superficial and less extensive, and the deeper tissues in the lower part of the neck are not opened up. Thus there is less risk of sepsis, and healing is more rapid.

This operation I recently carried out in the case of a feeble man, aged 72, with epithelioma of the right vocal cord. The man was suffering from general atheroma and cardiac degeneration, as well as from chronic emphysema and bronchitis. He was therefore a bad subject for a prolonged anæsthetic and especially for an operation upon the air-passages. It was essential that the operation should be performed quickly, that no blood or fluid should enter the windpipe during the operation, and that there should be no trouble in swallowing subsequently. Naturally also the smaller and the more superficial the wound and the quicker the healing, the more likely he was to survive. Under chloroform anæsthesia a curved horizontal incision was carried across the front of the larynx at the level of the crico-thyroid membrane. The tissues being divided down to the larynx the crico-thyroid membrane, the upper edge of the cricoid ring, and the right half of the thyroid cartilage were freely exposed. With a small saw the thyroid cartilage was divided in the median line from its lower edge nearly to the notch in its upper border. A cut almost at right angles to this was carried backwards just below the upper edge of the thyroid cartilage, and then another vertical incision was made near the posterior edge of the cartilage, so as to mark out a square of cartilage and leaving intact both the posterior and upper borders of the thyroid. The piece of cartilage thus marked out was detached from the soft parts underlying it with a blunt dissector and removed. All bleeding being arrested the interior of the larynx was carefully opened in the median line through the crico-thyroid membrane and upwards along the course of the first incision in the cartilage above described. Then an incision was carried backwards along the lower border of the crico-thyroid membrane as close to the cricoid ring as possible, and the edges of the triangular flap thus marked out being retracted the interior of the larynx and the growth could plainly be seen. The growth, with a sufficient margin of surrounding healthy tissue, was now detached on a third side by a horizontal incision carried well above it, and finally dissected posteriorly off the arytenoid cartilage. All this cutting was carried out piece by piece and every bleeding point being picked up at once, the growth was removed without a drop of blood entering the air-passages. The operation up to this point occupied barely 35 minutes. Some time was now spent in allowing the wound to become "glazed" by exposure to the air and letting the patient come almost out of the anæsthetic, so that no possible source of subsequent bleeding should be left. When the wound was quite dry the edges of the skin were brought together by two stitches, except for a small gap at its centre which was left open for drainage. A simple dressing was applied and the patient returned to bed. He made an uninterrupted recovery without any complications. He was in a very feeble condition, and I feel sure that he could not have stood a severe operation or even a prolonged anæsthetic.

This operation is both safer and more thorough than the ordinary thyrotomy. It is safer because (1) it is simpler and therefore more rapidly performed; (2) it allows free access to the field of operation and therefore complete facility for dealing with hæmorrhage; (3) the smaller and more superficial wound entails less danger of sepsis; (4) the transverse incision heals more quickly; and (5) tracheotomy is quite unnecessary and is therefore omitted. It is more thorough because (1) it allows a good view of the parts to be removed; and (2) the overlying cartilage is also removed. These advantages are obtained without any corresponding risks or disadvantages. I believe, therefore, that it will be the method of choice in the future, and that thyrotomy, except as a purely exploratory operation, will no longer be practised.

Devonshire-place, W.

THE ORIGIN AND PREVENTION OF CEREBRO-SPINAL FEVER.

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IT may be that if the causes and prevention of cerebro-spinal fever had been less simple they would have been more generally accepted by the profession to-day.

The Specific Organism.

The diplococcus intracellularis meningitidis of Weichselbaum conforms to Koch's law for pathogenic organisms. Constantly found in the tissues and body fluids of the victims of epidemic cerebro-spinal meningitis, the meningococcus may be isolated in pure culture, is able to reproduce the disease in monkeys, can be recovered from the lesions in these animals, and is therefore the causal organism of cerebro-spinal fever.

Apart from the monkey, man is the only animal in whose nervous system specific lesions are produced by this organism Starting, then, with the proved proposition that the meningococcus is the sole cause of cerebro-spinal fever, it is possible to show, with the exactness of a problem in Euclid, the means whereby man is infected, the conditions under which he develops the malady, and the method of preventing both infection and disease.

Conditions Determining the Spread of Infection.

At times when the disease is not prevalent meningococci have been found in the throats of 2 per cent of healthy soldiers.[1] Among healthy naval ratings, not known to have

[1] Brit. Med. Jour., 1915, vol. i., p. 466.

been exposed to infection, I found meningococci in the throats of two individuals out of a hundred examined. The organism has recently been found in a larger proportion of the civil population not exposed to infection.[2]

It is evident that meningococci may exist as harmless saprophytes in the throats of healthy persons. These people may or may not develop the disease, and they may or may not spread the infection to others. If they do transmit the meningococcus to other people, it is obvious that the number of persons amongst whom the disease may arise will be increased. The conditions which determine whether or not infection is spread are as follows. Any organism in the naso-pharynx may be expelled from the mouth during the act of coughing in small droplets of secretion which float in the air for from half an hour to four hours, according to the density and humidity of the atmosphere. This would easily explain the method of infection provided the temperature of the air was above 22° C., but on the other hand, meningococci soon perish at lower temperatures. Now 22° C corresponds to 71·6° F., and I found that meningococci die in 30 minutes when exposed to a temperature of 60° F., while lower temperatures are more rapidly fatal.[3] It is therefore clear that air-borne meningococcal infection can only occur in a warm atmosphere, and is impossible in cold air.

Epidemics of cerebro-spinal fever usually begin in January or February, and disappear with the advent of May. But January and February are the two coldest months of the year, as is proved by daily readings for many years of the temperature in the watermains at Chelsea. The temperature of water follows the mean air temperature, and in these months the lowest readings of 37° to 40° F. are obtained.[4] The paradox of a disease which appears during cold weather, but whose specific cause is destroyed by cold air and can only be carried by warm air, is explained by the fact that cold wet weather leads to shutting off the natural means of ventilation, and that the air indoors becomes warm and saturated. Under these conditions air-borne meningococcal infection is carried from one person to another. Overcrowding was long regarded as predisposing to the malady, but in my original communication[5] I showed that warm saturated air is the *actual cause* not only of the spread of infection but also of the incidence of the disease. An objection to this theory might be raised in the query, Why does not infection spread in the summer months when the air is warm? The air in summer is less saturated than in winter, droplets of secretion are dried up more rapidly, and meningococci offer no resistance to drying. Lastly, even if infection were spread in summer, the essential condition which determines the secondary invasion of the tissues would be absent.

Epidemics of cerebro-spinal fever have occurred among native races in tropical countries, and this is in favour of my explanation. In the West African jungle I found natives in ill-ventilated huts where the atmosphere at night must have been as saturated and warm from the breathing bodies of the occupants as the moist air from the swamps outside. In such a climate the only factor that would limit the spread of infection is the burning sun by day.

Conditions which Determine Secondary Invasion of the Tissues.

When warm saturated air is inhaled the nasal mucosa becomes swollen, congested, and covered with thick secretion, the activity of the ciliated cells is reduced, and phagocytic action in the lymphoid tissues is diminished.[6] This means a lowered local resistance to any bacterial infection which may be present in the naso-pharynx. Now bacteria are only saprophytic by virtue of the superior resistance of the tissues and if the resistance be lowered the bacteria become pathogenic. Warm saturated air enables meningococci to be carried to the naso-pharynx, creates there a local condition favourable to the growth of the parasite, and reduces the phagocytic properties of the lymphoid tissue, so that the organism is able to pass the first line of defence, enter the lymphatic system, and find its way *viâ* the blood stream to the central nervous system, on which either cold or over-fatigue have acted as predisposing influences. Furthermore, warm saturated air favours the incidence of all air-borne infections. Thus on Feb. 5th, 1916, between the hours of midnight and 2 A.M., and between 4 A.M. and 5 A.M., I visited barrack-rooms in which over 2000 men were sleeping. One example of the conditions which prevailed will suffice. Room E 3 was occupied by 16 men, which allowed 670 cubic feet per man. Of 12 windows only one was slightly open at the top. The air was hot, close, nauseating, and oppressive, while the moisture of condensation was streaming down the windows. I contend that the amount of cubic space per man is not a safe guide to the efficiency or deficiency of ventilation, which must be judged on common-sense data.

Now the case incidence of certain respiratory diseases due to air-borne infection in the above barracks was as follows for the six weeks ending Feb. 5th, 1916:—

Week ending—	Catarrh.	Tonsillitis.	Sore-throat.	Total strength.	Case incidence.
Jan. 1st	14	2	0	2112	7·5 per 1000.
Jan. 8th	5	3	0	2067	3·8 ,,
Jan. 15th	6	0	7	2091	6·2 ,,
Jan. 22nd	23	2	3	2125	13·1 ,,
Jan. 29th	18	6	4	2128	13·1 ,,
Feb. 5th	60	10	10	2155	37·1 ,,

The rise in diseases due to air-borne infection is very apparent during the last week, and in that week two cases of cerebro-spinal fever appeared.

Prevention.

Once cerebro-spinal fever has appeared in any community, bacteriological examination of the contacts discovers the number of infected persons. These are regarded as potential cases of the disease, and the development of the malady among such people can sometimes, but not always,[7] be prevented by the local application of antiseptic sprays or vapours to their throats. This treatment, if efficient, also prevents the further spread of infection, but of necessity it has a very limited application. It is no more practicable to free the throats of the entire population from meningococci than it would be to attack the widespread distribution of the pneumococcus as a saprophyte in the throats of healthy people.

To control the spread of infection once it has arisen is wise, but it would be infinitely wiser to prevent the possibility of infection in the first instance. The means of prevention are simple. All windows must be open day and night, and to prevent the necessity for closing them in rain or in wind, a weather-board of 18 inches in depth is fixed inside the lower part of the window at an angle of 45°, so that the lower sash may be screwed up one foot from the bottom. A night patrol may be required to see that the space between the window and the weather-board is not covered over with clothes to keep out the air. In the barracks to which I have referred these alterations were carried out at a cost of £200. No further cases of cerebro-spinal fever appeared, and the incidence of respiratory diseases showed a remarkable fall. These simple measures soon save their cost in preventing the possibility either of infection or disease, in obviating the necessity for an enormous amount of expert bacteriological work, in diminishing the incidence of all affections of the respiratory system, and in raising the general health of those to whom they are applied.

If these statements are tested on a large scale by the authorities during the coming winter there will be no cases of cerebro-spinal fever in the Services. There would be nothing very remarkable in such a fortunate result, for the power whose aid is here invoked is the *Vis Medicatrix Naturæ*.

[2] B it. Med. Jour., 1916, vol. ii., p. 228.
[3] THE LANCET, 1915, vol. ii., p. 862.
[4] Parkes and Kenwood: Hygiene and Public Health, fifth edition, p. 43
[5] THE LANCET, 1915, vol. ii., p. 862.
[6] Leonard Hill and F. F Muecke: THE LANCET, May 10th, 1913, p. 1291.
[7] C. H. Whiteside: Journ. of the R.N. Med. Service, vol. i., No. 3, p. 251.

Temporary Lieutenant-Colonel H. R. Kenwood, R.A.M.C., professor of hygiene and public health in the University of London, will deliver a public lecture at University College, London, on "Hygiene: Some Lessons of the War," on Friday next, Nov. 17th, at 5.30 P.M. The chair will be taken by Surgeon-General Sir Alfred Keogh, Director-General, Army Medical Service. The lecture is open to the public without fee or ticket.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF OPHTHALMOLOGY.

Inaugural Address.—Exhibition of Cases.—Photography of Macroscopic and Microscopic Eye Specimens.—Bilateral Glioma of the Retina.—Recurrent Glioma of the Retina.

A MEETING of this section was held on Nov. 1st, Mr. WILLIAM LANG, the President, being in the chair.

In his inaugural address, the PRESIDENT advocated the appointment of a small committee to initiate and organise research and, perhaps, a bureau for collecting particulars of rare cases. In this way a quantity of valuable material would be available for research scholars, or for a committee appointed to make use of it. Further, a card-index system for the recording of all literature bearing on the science of ophthalmology in the United Kingdom would be very valuable. At present pathological confirmation of the findings of clinical observation on an adequate scale was lacking, especially in regard to septic foci as the cause of many eye diseases. With the society's excellent laboratory it only needed a system of subsidised workers. This could well be the occasion for joining with other bodies in a crusade to instruct the nation in the cultivation of right habits, notably in regard to clean mouths. The same purpose pervaded all: to decrease by British effort the power of every disease.

Mr. G. WINFIELD ROLL showed a case of Congenital Pigmentation of the Optic Disc. The patient was the subject of glycosuria, and the right eye was affected with retinitis. The vessels in the remainder of the fundus were normal.

Dr. F. E. BATTEN showed a child with Pigmented Degeneration of the Retina associated with epileptic fits. The sight had failed somewhat rapidly during the last year, and a central scotoma in both eyes had been demonstrated, somewhat to the temporal side. There was also optic atrophy and some pigmentary disturbance at or near the macula. Physical examination of the nervous system was negative. The father was syphilitic, but this patient showed no trace of that disease.—The case was discussed by Mr. PATON, Mr. R. D. BATTEN, Captain A. W. ORMOND, Mr. MAYOU, Mr. HERBERT PARSONS, and the PRESIDENT.

Mr. NORMAN B. B. FLEMING showed a case of Retinitis Circinata, with changes in blood-vessels.

Mr. A. C. HUDSON exhibited a new small Speculum.

Lieutenant-Colonel R. H. ELLIOT and Mrs. ELLIOT communicated a paper on the Photography of Macroscopic and Microscopic Eye Specimens. The object of the paper was to help those who desired to photograph macroscopic eye preparations, there being no available literature on the subject. The following points were regarded as of importance: 1. The photograph must be taken in water, without the intervention of glass or other similar material. 2. The source of light must be good and even. 3. The camera must be placed vertically above the object so as to avoid reflections. 4. The object of the photograph must be so placed that its image will occupy the centre of the plate, and a method of adjustment should be available to secure this end with a minimum of inconvenience. 5. A simple arrangement is necessary to fix the eye in position during the whole period of exposure. 6. To save unnecessary retouching the object should be photographed lying on a dark and uniform surface to obviate the background disturbing the attention of those viewing the picture. 7. Care should be exercised in the choice of a camera and exposure periods must be carefully studied. For the making of lantern-slides the contact method was recommended, and attention was directed to the following points: correct exposure; the preparation of plates for exposure; development and fixation of the slides; the drying of the plates; and the reduction, intensification, and varnishing of slides.

Dr. FRANK E. TAYLOR and Mr. FLEMING contributed a paper on a case of Bilateral Glioma of the Retina with Multiple Metastases. The patient was a female child aged 3 years, in whom an abnormality was noticed in the left eye 18 months previously. On admission to hospital there was a fungating growth protruding between the lids of the left eye, keeping them separate. The mass was bathed with a thin, semi-purulent discharge. The right eye was much enlarged, and apparently proptosed, the iris fully dilated, and stretched into a thin band at the limbus, the lens being in contact with the posterior aspect of the cornea. The growth was of lemon colour. No reflex was obtainable ophthalmoscopically. Mr. Elmore W. Brewerton (with whose permission the case was recorded) operated at once, performing exenteration of the orbit, with partial removal of the lids, afterwards suturing the wound. The right eye was very freely excised. The optic nerve was found to be involved, being surrounded by growth for half an inch behind the eye. A fortnight after discharge from hospital there was a recurrence, half the size of a tennis ball, from which the patient died. She had shown but little evidence of suffering pain. Microscopically the growths were found to be composed of closely-packed small round cells, with large deeply-staining nuclei. A few spindle cells were also present. The body was much emaciated, and the metastases were extensively distributed. The subject was discussed from a general standpoint.

Mr. ARNOLD LAWSON read notes on a case of Recurrent Glioma of the Retina. The patient was a boy aged 3½ years, and the gliomatous eye was removed. It had almost perforated the globe. Mr. R. A. Greeves found a large scleral staphyloma at the front, and it was infiltrated with glioma cells, while masses of growth could be traced along the sheath of the foramen. After the patient had remained well for six months there was a recurrence in the orbital cellular tissues, and evisceration was carried out at hospital. There was a further recurrence, and 90 mgm. of radium were applied for four and a half hours. Free sloughing followed, and the child was kept in hospital for six and a half weeks, at the end of which time there seemed to be no sign of growth. Three months later, however, the patient was readmitted on account of a fluctuating swelling; it yielded pus, at the bottom of which was suspicious pultaceous material. Investigation revealed an extensive recurrence, beyond the reach of either further operation or radium. The child appeared to have a remarkable absence of pain, and seemed fairly comfortable except towards the end.—This paper and the preceding one were discussed by Mr. W. C. ROCKLIFFE, Mr. BREWERTON, Mr. PARSONS, Mr. HOLMES SPICER, Lieut.-Colonel ELLIOT, and Mr. TREACHER COLLINS, the last named calling attention to the different methods of spread of glioma and sarcoma of the orbit: one began in the neural epiblast and the other in the mesoblastic tissue. Sarcoma of the choroid generally spread by metastases, whereas gliomatous growths spread by continuity, and death occurred from local recurrences, as was shown in a number of cases traced by Mr. J. B. Lawford and himself. Lieut.-Colonel Elliot agreed with Mr. Brewerton's operative procedures, speaking from his experience of a number of such cases in India.

HARVEIAN SOCIETY OF LONDON.—A meeting of this society was held on Nov. 2nd, Dr. Edmund Cautley, the President, being in the chair.—A paper entitled "Warfare on the Brain" was read by Dr. E. Farquhar Buzzard, dealing chiefly with the subjects of shell shock and, secondly, traumatic epilepsy. Dr. Buzzard said that shell shock, a much-abused and unfortunate term, covered (*a*) cases of pure exhaustion; (*b*) cases in which exhaustion had excited inherited neuropathic and psychopathic tendencies into activity; (*c*) "martial misfits" passing as normal individuals in civil life but unable to bear the strain of military service; (*d*) normal individuals affected by close shell explosion and showing symptoms similar to those following a blow on the head. Care must be taken to exclude the presence of organic changes in the skull or brain; such a symptom as mutism is hysterical and signifies mental disorder and not a localised cerebral injury. In the first three groups direct exposure to shell explosion might be absent, he said, or at most was merely a culminating factor in the production of symptoms. The principle underlying surgical interference was, Dr. Buzzard said, not to cure the epilepsy but to restore the injured part of the brain as far as possible towards the normal; where operation would have the opposite effect it was contra-indicated. The treatment of the epilepsy itself was medical, and the prophylactic use of bromide in cases of head injury of great importance. The problem of the treatment of the large numbers of these cases occurring at the present time would, he said, be of national importance.—An interesting discussion followed Dr. Buzzard's paper.

Reviews and Notices of Books.

Les Formes Anormales du Tétanos.

Par M. COURTOIS-SUFFIT, Médecin des Hôpitaux de Paris, et R. GIROUX, Interne Pr. des Hôpitaux de Paris. Préface du Professeur FERNAND-WIDAL. Paris: Masson et Cie. 1916. Pp. 174.

THIS is one of a series of books connected with the war. It deals with the vastly important subject of tetanus, which was so greatly in evidence in the earlier stages of the war in Flanders and the north of France; but it does not concern itself with the typical and ordinary cases of the disease which naturally form the large majority of those seen, treating rather of the abnormal forms, which are more numerous than most surgeons think. The forms of tetanus to which the authors specially apply the term atypical are mainly those in which the disease is confined to the head, and those in which only a localised affection of the limbs occurs. Of the cephalic form there are several varieties according to the parts involved, such as those in which the eye muscles are affected and those where the hypoglossal is paralysed. In the partial forms of tetanus affecting the limbs we find cases where the disease is monoplegic and others in which it is paraplegic; and others again in which the muscles affected are only those of the thorax and abdomen.

Professor Widal, who contributes a brief preface to this monograph, writes thus on the subject of local tetanus, and the passage is of sufficient importance to quote at length:—

> Partial tetanus of the limbs offers not merely the interest of a clinical novelty; its special mechanism gives it a general bearing on the production of tetanus, an aspect which the authors rightly emphasise. In the same way as an attenuated typhoid fever is now and then met with in subjects insufficiently vaccinated, so tetanus may remain localised to the injured limb when sero-therapy has been practised under conditions which render it insufficient. It is a tetanus of incomplete immunisation and affords a good example of the modified morbid types with which preventive medicine is enriching the natural history of infectious diseases.

The authors have made a wide examination of medical literature as the extensive bibliography shows, and this monograph on the little-known varieties of a disease not commonly seen in civil practice is timely and valuable. The sections on prophylaxis and treatment are good, and it is hardly necessary to say that the authors insist on the prophylactic injection of antitetanic serum as the only trustworthy method of prevention.

LIBRARY TABLE.

Anatomy, Descriptive and Applied. By HENRY GRAY, F.R.S. Edited by ROBERT HOWDEN, M.A., D.Sc. Durh., M.B., C.M.Edin., Professor of Anatomy in the University of Durham. Notes on Applied Anatomy revised by A. J. JEX-BLAKE, M.A., M.D. Oxon., F.R.C.P. Lond., Senior Assistant Physician to St. George's Hospital; and W. FEDDE FEDDEN, M.B., M.S. Lond., F.R.C.S. Eng., Surgeon and Lecturer on Surgery, St. George's Hospital. Nineteenth edition. With 1143 illustrations, of which 499 are coloured. London: Longmans, Green, and Co. 1916. Pp. xvi.–1304. Price 32*s.* net.—This (nineteenth) edition continues to maintain all the best traditions of "Gray's Anatomy"—a work which is familiar to English-speaking medical men all the world over. We notice that the number of coloured illustrations has been increased, and that some 80 figures are new. A considerable number (about 60) of the older illustrations have been done away with and replaced by drawings which are the work of Mr. S. A. Sewell. The text has been revised throughout, but the general arrangement of the book is similar to that of the last edition.

The Essentials of Chemical Physiology for the Use of Students. By W. D. HALLIBURTON, M.D. Lond., LL.D., F.R.S. Ninth edition. With coloured plate. London: Longmans, Green, and Co. 1916. Pp. 324. Price 6*s.* net.—This eminently practical book has reached its ninth edition which speaks well for its reception. It is rightly a great favourite with the student. Worthy of notice amongst the new matter are Ruhemann's discovery of the ninhydrin reaction for amino-acids, the urease method for estimating urea, the volumetric process for estimating sulphates, and the picric acid colorimetric method of Lewis and Benedict for estimating the sugar in the blood. This latest edition is a worthy successor of previous ones; the general outlines, a very difficult subject, are clearly stated and presented in a sequence which the student in the physiological laboratory will appreciate.

Authentic Dreams of Peter Blobbs, M.D. Dunelm, and of Certain of his Relatives; Told by Himself, with the Assistance of Mrs. Blobbs. London: Longmans, Green, and Co. 1916. Pp. 42. Price 1*s.* net.—Although this little book is published pseudonymously, it is not difficult from internal evidence to identify the writer. It is written with the praiseworthy object of assisting the funds of the Prisoners of War Help Committee, 5 and 7, Southampton-street, Strand. Of the dreams related the two first are the most striking, but what is chiefly notable in all of them is that they are free from the inconsequence which is so marked a feature of the dreams of most of us, an admirable example of which in literature is the dream in Kipling's "Brushwood Boy." The little book is cheap, it is quite worth reading, and any profits will go towards a worthy object. Therefore we hope it will have a large sale.

JOURNALS.

The Philippine Journal of Tropical Medicine, Vol. XI., No. 1.—To this number of the *Journal* Dr. E. R. Ruediger, of the Bureau of Science, Manila, contributes an article in which he describes some experiments he made with the view of finding some chemical agent which would render serum sterile and keep it so, without interfering with the tests to be applied to it. It is well known to serologists that when human serum is sent from a distance for the Wassermann reaction, it sometimes arrives in an utterly unfit condition for the examination; occasionally it is even putrid. Dr. Ruediger experimented with phenol, lysol, tricresol, and chloroform, all of which were soon abandoned as unsuitable. A more prolonged trial was made of formalin and glycerine, but it was found that the former was not suitable for the preservation of human serum intended for the Wassermann test. Sera which gave moderately positive results before the addition of formalin yielded negative, or nearly negative, results after this agent had been added. Glycerine, however, kept the serum sterile and did not noticeably influence the Wassermann reaction, nor the Tschernogubow modification of it. A second article is also supplied by Dr. Ruediger to this number of the *Journal* and deals with the subject of Hæmolysis by Human Serum.—Dr. Maria Paz Mendoza-Guazon, of the Department of Pathology and Bacteriology, University of the Philippines, describes an interesting case, with three illustrations in the text, of infestation of a child aged 8 months with a comparatively rare species of tapeworm in the human subject, the Dipylidium caninum, which is parasitic in dogs and cats and other carnivorous animals. The author, as regards prophylaxis, recommends the exclusion of domestic dogs and cats from opportunities of coming in contact with young children, especially those playing on the floor, and the taking of measures to prevent infants from putting their fingers in the mouth after touching dogs or cats.—The last article in this number is furnished jointly by Dr. Daniel de la Paz and Dr. Faustino Garcia, of the Departments of Physiology and Pharmacology, University of the Philippines. It is an experimental study of the use of apomorphine for the purpose of aiding the removal of foreign bodies from the respiratory passages, particularly from the trachea. This method is still mentioned in some standard text-books on pharmacology, the claim being that, as the result of the administration of apomorphine, coincidently with the act of vomiting, violent movements are produced which expel, or at least facilitate the expulsion of, the foreign body from the respiratory tract. Experiments to test this claim were carried out on dogs, but the authors were led to the conclusion that the use of apomorphine does not facilitate the removal of foreign bodies from the trachea.

Reports and Analytical Records
FROM
THE LANCET LABORATORY.

ZOEL ANTISEPTIC.

(AGENCY: G. LYNCH, WHITEHALL HOUSE, 29-30, CHARING CROSS, S.W.)

AMONGST boron compounds little attention appears to have been given to the monoborates, which bear a relation to diborates—e.g., borax—similar to that which carbonate of soda bears to bicarbonate of soda. The basic borate would, however, appear to possess valuable and distinctive antiseptic and deodorant properties which do not belong to the diborate or the free acid. We have recently had submitted to us a fluid preparation of monoborate of soda which, according to recent observations, has given most encouraging results in the treatment of wounds and in general antiseptic use. Some emphasis is laid upon the fact that it is alkaline which might imply irritating qualities. But this does not appear to be the case, while, of course, on account of its alkalinity it permits a free flow of lymph without causing it to coagulate or form incrustations. We have received some practical testimony on these points from hospitals where this monoborate fluid has been used in cases of wounds. The coagulating properties of an acid antiseptic would give preference to the use of an alkaline antiseptic so long as it is free from irritating properties, and that appears to be a favourable feature of the monoborate, which is besides a deodorant. The collaboration of an alkaline condition with an antiseptic means also that at the same time a detergent and cleanser is being used, encouraging the healing process. This development of the monoborates for antiseptic use, either in the form of potassium or sodium salt, is due to Mr. Charles Billing. The solution is quite stable and can be used if required warm. The hypochlorites, of course, are not stable under these conditions. There seems to be an interesting and important future in antiseptic work for the monoborates prepared in this way. Both a fluid and a dry salt are made.

BUTYL NITRITE.

(EVERITT AND CO., LIMITED, SOUTHALL, MIDDLESEX.)

We cannot trace any reference to the use of normal butyl nitrite in the same way that amyl nitrite has been employed in therapeutics, but the suggestion is of interest that the butyl nitrite might have advantages over its higher homologue and other nitrites which, as is well known, dilate the vessels and lower the blood pressure. The specimen submitted to us was a pale yellow oil which showed a boiling-point of about 68° C. It is, of course, somewhat more volatile than amyl nitrite and vaporises more easily, and a few seconds' inhalation causes the face to be flushed and a distinct effect on the pulse is accordingly produced. The preparation claims some attention as it may prove to have advantages over amyl nitrite derived from an alcohol of higher molecular weight. Toxicity decreases with reduction in molecular weight in many cases.

"KEPLER" COD-LIVER OIL WITH MALT EXTRACT AND CREOSOTE.

(BURROUGHS, WELLCOME, AND CO., SNOW HILL BUILDINGS, LONDON, E.C.)

This preparation represents the highly nutritive and digestive qualities of a malt extract prepared on scientific lines, of a refined cod-liver oil, and, lastly, of creosote, which possesses antifermentative properties. The combination is known to be of value in the treatment of phthisis, and it has the advantage of possessing an attractive flavour rather than a disagreeable one. In those cases in which it is desirable to help the nutritive needs of the patient—in wasting diseases generally—this preparation is, no doubt, of service.

BRITISH-MADE LANOLIN B.P.

(LONDON PHARMACEUTICAL REFINERS, LIMITED, MARTIN'S YARD, ENDWELL-ROAD, BROCKLEY, S.E.)

We have carefully examined this specimen of lanolin and we find that it answers all the requirements of the British Pharmacopœia. According to our examination it contained only 0·14 per cent. of moisture and 0·08 per cent. of mineral matter. These results are a long way below the limits set out in the official demand. Further, we found that its acidity in terms of oleic acid was only 0·42 per cent., against a presumable limit of 0·7 per cent. It has been pointed out that in the test for acidity in the British Pharmacopœia it is recommended to make a solution in ether of 0·2 gramme for titration with N/10 alkali which would place the limit of free (oleic) acid at 7 per cent. It is an obvious slip; a solution should be made of 2 grammes and then the limit becomes 0·7 per cent. This matter is of some importance, as any increase in the amount of free fatty acid in lanolin is opposed to its value as a basis in many directions.

New Inventions.

A NEW BANDAGE FOR AMPUTATION STUMPS.

THE object of this bandage is to keep dressings on the stump after amputations in the lower limb; slight modifications of it will serve the same purpose in the case of the upper limb. Four pieces of domette or flannel are used; the width should be about 4 in. The exact measurements will vary with the patient. The band *a* in Fig. 1 should go round the waist above the iliac crests; and *b* and *c* round the stump. It will be found better for *b* and *c* to be nearer the lower end of the stump, as shown in Fig. 2. The band *d* should pass down the back of the thigh, then be brought round the bottom of the stump, and fixed anteriorly by means of safety-pins (as shown in Fig. 2 at *e''* and *e'*), and finally to the waist-band at *e*. The junction of the bands *a* and *d* can be made with safety-pins or, better, by sewing with cotton. In the case of a stump below the knee or the elbow the band *a* will, of course, be made smaller and go round the parts above the joint. In the application of this bandage (3 inches wide) to the upper limb above the elbow-joint the point *e* should be about the middle of the band *a*, which should be crossed over the shoulder in a figure of eight and fixed with a safety-pin round the neck. Point *e'* will be rather near to *e*; the band *d* should be brought down the inner side of the arm round the stump, and fixed with safety-pins on the outer side of the arm to the bands *c* and *b*. A 3-inch roller bandage should be first applied to approximate dressings to the stump, and then the bandage described above applied over it.

FIG. 1.

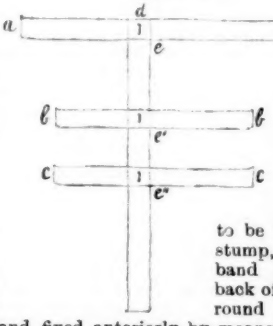
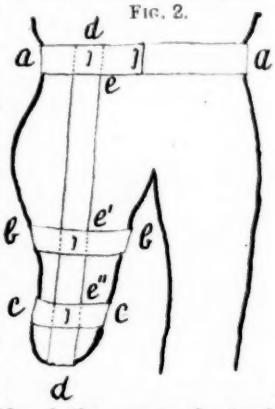


FIG. 2.



W. S. RICHARDSON,
Captain, R.A.M.C. (T.).

AN IMPROVED SUTURE FORCEPS.

THE improvement in the suture forceps as shown by the illustration consists in curving Moynihan's forceps on the edge, thus removing the obstruction to the line of sight.

The advantage is at once appreciated when the instrument is in use. It is now obtainable from Messrs. Allen and Hanburys, Limited, Wigmore-street, London, W.

Orpington, Kent. E. W. DIVER, M.D. Durh.

THE LANCET.

LONDON: SATURDAY, NOVEMBER 11, 1916.

The Financial Interests of Medical Men on Service.

FOR the medical man it is always "business as usual," for whatever the circumstances or the environment there remains the same twofold task—he has to prevent disease and to remedy it. At the outbreak of war the words "business as usual" became a catch-phrase with writers and speakers. It was used to imply in the briefest form the greatness of this country, its powers of resource, and its equable temperament; and there is no doubt that in this way it became a sufficiently mischievous text, doing appreciable harm to our military efficiency in the preliminary stages of the conflict. For those who preached from the catch-phrase fostered a spirit under which things were taken too easily; thus recruiting was restricted, and the men who hung back thought their behaviour justified, and thereby lost many months of valuable training. It is true that the words soon ceased to be used, when their mischievous teaching was perceived; but the effect of this teaching remained and lay behind the opposition to compulsory military service.

Quite properly the words "business as usual" can be applied to the course which medical men should pursue now as always. The medical profession continues during the war to do that business of preventing and remedying disease and injuries which it was called upon to do before the war. The circumstances in which we work have altered only in appearance, for is it not true that the thousands of medical practitioners who are now with the colours are there because it is there that the disease and the injuries of a large proportion of our male population are to be found? But the fact remains that the more fragile section of the population stays behind, and on the medical men who remain to care for them there falls the grave responsibility of increased work with no commensurate increase of income. Complaints have reached the Central Medical War Committee that some practitioners are not recognising as fully as they should do their moral obligations to professional brethren who have undertaken military service. The Committee in expressing the opinion that these obligations should be cheerfully and generously discharged, as a privilege as well as a duty, are speaking for all the profession, and it must be remembered that the members of the Committee have exceptional facilities for knowing the problems that have arisen out of the existing dislocation of civil practice. Many medical men have made and are making very great sacrifices for their country, and the Central Medical War Committee suggest that thoughtlessness usually accounts for the fact that some of those who remain at home are profiting unduly by their neighbours' patriotism. There is, however, much evidence to show that the private practices of many men on active service have almost disappeared. This is mainly because practitioners do not take the trouble to ascertain whether new patients were or were not in the habit of consulting doctors now on active service, and the Committee have devised a procedure which, if carried out, will minimise the loss which must in any case fall on those who leave their practices for any considerable period. In so doing, and not for the first time, the Committee are rendering service to the medical profession of a practical kind. They supply medical men with a scheme under which they can watch over the interests of brother practitioners on military service in the most convenient way, and they deprive indolent men of any excuse for taking no heed to the existing position, and for drawing profits from their want of thought.

We publish on p. 844 of the present issue of THE LANCET the procedure which the Central Medical War Committee propose might be followed, with suitable variations in different areas, for safeguarding the practices of medical men on active service, and we trust that all who are concerned will give the suggestions the closest possible attention. The regulations have been very carefully drawn up and an anxious attempt has been made to cover, under one or other of 13 headings, the main defects that are likely to arise where a medical man has gone on active service and left his practice to be managed for him by his professional colleagues. We would draw special attention to the regulation dealing with a vacancy which occurs from the death of a practitioner on service. Our columns are recording only too frequently these tragedies, and the honour of the profession is especially involved in seeing that any surviving relatives of the deceased officer shall benefit by the sale of his practice. The number of medical men who have already been killed while on active service is so large as to make it right that definite arrangements should be made in all areas to deal with a possible event. The needs of medical practitioners who have suffered financially through naval or military service must be taken under serious consideration by their brethren.

Local Tetanus.

THE control of tetanus by the prophylactic injection of antitoxin will justly rank as one of the triumphs of preventive medicine in the present war. Few wounded men now escape the injection, and the disease has become relatively rare in spite of the abundant infection which must still occur. But although tetanus has been scotched it has not been killed; cases are still occurring, though in small numbers. There is strong experimental evidence, as the recent revised Memorandum issued by the War Office Committee for the Study of Tetanus shows, that in about ten days the immunity conferred by the primary injection of antitoxin is to a great extent lost. Sir DAVID BRUCE, 12 months ago, concluded, upon an analysis of 231 cases of

tetanus treated in home military hospitals, that a prophylactic dose of antitetanic serum was at that time rarely given.[1] Now it is seen that a single dose may be insufficient. It is desirable, therefore, to draw attention to a result of the preventive administration of serum—namely, the occasional occurrence of the disease in spite of a prophylactic injection but modified by the latter to such a degree that it may become difficult of recognition. For some time past cases have been noted, in this and other countries, in which persistent spastic rigidity of a wounded limb has set in, lasting for weeks or even months, and occasionally ending in permanent contracture. Trismus may be quite absent in these cases and the condition has been so unlike the usual clinical picture of tetanus that the diagnosis has remained in doubt. Last November we published notes of three such cases by Lieutenant-Colonel R. D. RUDOLF and notes of another case by Mr. R. ATKINSON STONEY; our Paris correspondent in our issue of Feb. 19th called attention to the occurrence of somewhat analogous cases of "late tetanus"; other similar instances have since been recorded, and it is probable that they are occurring wherever the prophylactic injection of antitoxin is systematically practised. It is now clear that these cases of local spastic rigidity in wounded limbs are modified tetanus. There are two good reasons for this belief. The first is that in some of them the more ordinary symptoms of tetanus are later added to the local spasm; trismus, for instance, may supervene after some days or weeks, while in most cases, if not in all, careful examination detects some of the nervous manifestations of tetanus beyond the limits of the part primarily affected. The second reason lies in the identity of the condition with that which may be produced experimentally with tetanus toxin in animals. In the cat, an animal relatively insusceptible to tetanus, a sub-fatal dose of toxin produces a highly persistent tonic spasm of the limb injected, and nothing else. The same is true of the guinea-pig if the dose of toxin is accompanied or shortly followed by a sufficient dose of antitoxin. The man, like the guinea-pig, seems to be reduced by the dose of antitoxin to the level of insusceptibility naturally occupied by the cat.

The subject has recently been illuminated by Dr. MONTAIS in the July number of the *Annales de l'Institut Pasteur*, as well as by Dr. COURTOIS-SUFFIT and Dr. R. GIROUX in a monograph of which a review appears in another column. Dr. MONTAIS has collected from French sources alone no less than 21 cases of purely local tetanus, without trismus, as well as a number of similar cases in which trismus and other general symptoms later supervened. All were in persons who had received a prophylactic injection of serum. Although the form of tetanus which begins locally and is followed by trismus has long been known, pure local tetanus is a pathological novelty in man. Dr. MONTAIS states that the first case was recorded in 1913. The condition, he claims, is the creation of preventive serotherapy; tetanus tends to assume this form the more frequently the shorter the interval between its onset and the prophylactic dose of serum. The influence of the serum gradually fades and Dr. MONTAIS distinguishes four degrees of modification according to the respective predominance of local or general symptoms. With the increasing involvement of the higher centres the mortality rises; contrary to the rule in ordinary tetanus, the prognosis becomes worse the later the disease arises in the protected man. Dr. MONTAIS'S first group is that in which the tetanus remains limited to the region of the wound, or at the most shows some extension to the centres at the same spinal level; the pontine and bulbar centres escape altogether. It is this form which alone deserves the name of strictly local tetanus, and he finds it almost confined to the first month after the prophylactic injection. Sometimes the incubation period was only a few days, but in one case it was three months. Only two of his 21 cases died. In his second group, more frequent than the first, the tetanus is still local in its onset, but the protection of the higher centres is no longer complete, and after an interval of days or weeks, trismus and other general symptoms appear as a secondary phenomenon, often of no great severity: the disease is still in the main local. Such cases, says Dr. MONTAIS, may occur at any time during the first two months after the preventive injection, and the mortality is somewhat higher than in the first group. In the third and fourth groups, rarely seen within the first month, but apt to occur from the second month onwards, the protection of the higher centres is much less complete. The first obvious manifestations of the disease are trismus, cervical rigidity, and other well-known signs of general tetanus; a local onset in the wounded limb is no longer seen or at least no longer attracts attention. In the third group, although the protective action of the serum is largely exhausted, some residue of immunity still modifies the severity of the attack; the course of the disease may be slow and characterised by persistent spasticity rather than by severe crises. The mortality is here much higher—according to BAZY from 33 to 50 per cent. In the fourth group the tetanus is of ordinary type, all protection having vanished.

It is plain that this classification is an arbitrary one, and that the groups shade into one another, nor can the dates of occurrence of the different types be more than a general indication, since, as Dr. MONTAIS himself admits, the rate at which protection fades is a variable one. The tetanus bacillus is implanted in wounds usually, if not always, in the form of spores, and these may germinate and give rise to the vegetative organism, with its production of toxin, at any time up to many months after implantation, or they may never germinate at all. They are very difficult of destruction, and the wound may heal, leaving them still intact. The reawakening of such dormant spores is the cause of late tetanus, and this may occur long after the effect of prophylaxis has faded. The question arises why early tetanus in the protected man should assume the local form, and the

[1] THE LANCET, Oct. 23rd, 1915, p. 901.

answer seems as follows. It is generally held, since the work of MEYER and RANSOM, that the motor neurons are accessible to tetanus toxin only at their peripheral terminations in the muscles; the central nervous system is thus attacked up the motor nerves. The main route from a wound is hence obvious, and there is no difficulty in understanding the early involvement of those spinal centres corresponding to the site of the wound. Simple local tetanus is, however, practically unknown in the unprotected man; as a rule the centres in the pons and medulla suffer earliest, probably because in man they are the most susceptible. The route to these centres, except where the seat of infection lies within the realm of the cranial nerves, is a roundabout one through the blood-stream. In the protected man the antitoxin is circulating in the blood, and has therefore a far better chance of shielding the higher centres than the spinal ones directly accessible from the wound. The early case of local tetanus is, as Dr. MONTAIS urges, one in which the production of toxin is early and copious; but in the protected man, instead of a rapidly fatal issue, we see the violence of the attack spent upon the lower spinal centres because the higher ones are shielded. The mortality is low because the prognosis depends largely upon whether or not the higher centres are attacked. The gradual fading of protection, as time goes on, explains the reappearance of trismus and other general symptoms, till in the later stages the disease again runs its usual course. The combination of circumstances which leads to local tetanus is an uncommon one, but the explanation outlined above seems to be satisfactory.

With regard to the treatment of local tetanus, it would appear that the condition tends to be chronic, and that it is not readily affected by the administration of antitoxin. Dr. MONTAIS suggests that, since the fact that the tetanus is local proves the higher centres to be shielded, it will suffice to keep up the existing protection by the subcutaneous exhibition of serum. He quotes GOVAERTS, however, as affirming that the intrathecal route is particularly useful in this form of tetanus. There may not be the same urgency for the administration of antitoxin by the intrathecal route as exists in general tetanus, but this route would still appear to offer the best means of overcoming the local form of the disease. The first authorities in all countries advise that, to prevent tetanus in the wounded soldier, the protection given by the primary prophylactic dose of serum should be reinforced by its repetition at weekly intervals so long as the condition of the wound demands it. The War Office Memorandum, already mentioned, recommends this course in cases of long-continued septic wounds, particularly those caused by shell or bomb, and adds that the danger of anaphylactic shock, which may have deterred surgeons from this practice, is negligible when prophylactic doses of 500 U.S.A. units contained in 3 c.c. of horse serum are given subcutaneously, whatever the interval after the preceding injection. Even if the disease cannot thus be wholly prevented, the recorded cases of its conversion into the local form show that it may sometimes be robbed of its worst terrors.

Annotations.

"Ne quid nimis."

SALT IN THE DIETARY.

THE decision contained in an Army Order issued recently to reduce the ration of salt from half an ounce to a quarter of an ounce brings to the front the whole question of the rôle of salt in the dietary. The Order undoubtedly allows for the actual daily requirements of the body, since this has been calculated to be not more than an intake of 2 grammes, while a quarter of an ounce amounts to a little over 7 grammes. Few of us are concerned to think that by taking salt with food we are keeping up a saline equilibrium; we only value it for its salinity and in practice as a condiment, and its dietetic importance probably rests on the fact that it makes so many foods palatable. The foods which furnish salt are generally the animal foods, for sodium chloride forms a comparatively small percentage of the salts present in the cereals, tubers, and pulses. These contain chiefly potassium salts. Few foods, however, possess a natural salinity of their own; the oyster may be mentioned as an exception. The daily food ingested provides sufficient sodium salts for the body needs, yet such food is not salt to the taste, and this consideration would seem to confine added salt to the category of a condiment. Its action as a condiment deserves, however, further study, because the development of flavour which the addition of salt induces is undoubtedly due to increased osmotic action. In other words, the addition of salt conspires to produce an isotonic fluid with more rapid travelling activities, stimulating salivary flow and subsequently the secretion of the gastric fluid. The evidence, therefore, is in favour of the use of salt, not because there is a shortage of this in a mixed diet, but because it increases the palatability of food and likely enough its absorption value. The Army Order allowance seems small, particularly if the ration should include a preponderance of unsalted vegetable ingredients, but, on the whole, salt is extravagantly and wastefully employed.

A NEW METHOD OF STERILISATION AGAINST PEDICULI.

Professor Alfonso Muto, director of field hospital No. 59 of the Italian Army, has devised a simple and effective method of sterilising the soldiers' clothes as a prophylactic measure against exanthematous typhus.[1] He claims that in a 10 per cent. solution of creoline we have a substance which has the advantages of not being inflammable nor harmful to human beings, nor having a disagreeable odour. It does not damage the texture of the clothes or affect their colour, but, on the other hand, protects them against moth. It is easily obtainable, cheap, and destroys the parasites and their eggs in a very short space of time. The only apparatus required consists of a collapsible wardrobe, light and easily transportable, having a boiler of about 18 litres capacity which is connected by a pipe to the interior and can be heated over an ordinary wood fire. The clothes are hung up in the wardrobe and the creoline solution boiled; the clothes are withdrawn after another quarter of an hour, when they will be found to be hardly damp. Moreover, Professor Muto has observed that small needle-shaped

[1] Annali d' Igiene, August 31st.

crystals of naphthalin are deposited on the surface of the articles, which have an active and beneficial prophylactic action, since they prevent for a considerable period any fresh invasion of the parasite. This method is said to have overcome many of the difficulties met with in organising an antipedicular prophylaxis among troops on active service. That the soldier must remain stripped during the whole time occupied in disinfecting his clothes is an objection which has its palliating circumstances, since the interval may be utilised in applying some antiparasitic inunction in a tent.

THE "COMPLUETIC REACTION" (WASSERMANN) IN 100 CASES OF AMENTIA.

A USEFUL and suggestive investigation of the causative factors of idiocy and imbecility has been conducted by Mr. H. F. Stephens, and his results are incorporated in a paper recently read before the Psychiatry Section of the Royal Society of Medicine. His material consisted of 100 cases of amentia, of which 76 were cases of primary amentia and 24 of secondary amentia. Included in these groups were 11 cases of mongolianism, 4 of cretinism, 7 of amentia with paralysis (hemiplegia, &c.), 17 of amentia with recurring convulsions, and 3 of amentia with hydrocephalus. The inquiry was conducted with reference more particularly to the presence or absence of the Wassermann reaction as indicative of syphilitic activity. The mere fact that the great majority of the patients examined came under institutional discipline and observation at a very early age is sufficient to exclude the likelihood of any direct acquisition of that disease, apart from the absence of all the physical signs and symptoms of acquired syphilis at any period of their lives, so that where the Wassermann reaction was present the patients may be declared to be the victims of intra-uterine or congenital syphilis. Of the 100 cases, no fewer than 42 gave a positive reaction of varying strength. Mr. Stephens has told at considerable length the exact technique followed and the controls adopted, whereby the trustworthiness of his findings was thoroughly tested. It is interesting to note that in none of the positive cases were any of the accepted signs of congenital syphilis discovered, a fact which has been remarked by other workers in the same field. In view of the obvious truth that not all children of syphilitic parents are aments, the question arises whether the manifestations of congenital syphilis bear any relation to the time of onset of the infection *in utero*. According to Mr. Stephens, the majority of congenital syphilitics bear evidence of epiblastic or mesoblastic infection, which suggests a comparatively late intra-uterine onset, whereas amentia—i.e., such amentia as is here described—associated with a positive Wassermann reaction in the blood, is, broadly speaking, equivalent to arrest of brain development, and suggests a very early embryonic infection. A further matter of some interest is the determination of the part played by the syphilitic virus in the establishment of the amentia: is its solitary action responsible for the mental defect, or are other factors implicated? Mr. Stephens specifies such factors as neuropathic inheritance, alcoholism, consanguinity, antenatal adverse mental or physical states of the mother, and finds that in no one of his cases was the syphilitic virus unassociated with at least one of these etiological components. He draws the cautious conclusions that it appears to be the essential factor in 25 cases, the exciting or determinant factor in 6, an auxiliary or augmentary factor in 11. In his series of 11 mongols 3 gave a positive reaction; 2 of 4 cretins and 10 of 17 epileptic idiots gave a similarly positive result. It is difficult to know what significance to attach to the findings in the mongols and cretins. The mongol type, from both psychic and somatic view-points, is so well defined, so systematised, that syphilis can scarcely be regarded as an essential factor if only three of 11 cases are positive, and there would appear to be equal difficulties in the way of regarding that factor as determining or even auxiliary. Mr. Stephens says little in his paper of the hypothesis of mere coincidence, yet in regard to both cretins and mongols it may be asked whether the occurrence of a syphilitic taint is not simply accidental. In his summing-up, indeed, he declares that in none of his cases did the syphilitic virus appear to be *wholly* responsible, but seemed rather to have been associated with and to have acted upon "inherently defective, diseased and degenerated, or damaged tissues." As the Belgian Professor Bordet was the first to discover and establish the essential principle of the "Wassermann" test, Mr. Stephens holds that the proper name should be the "Bordet-Gengou phenomenon in syphilis," but he prefers the simpler term "compluetic reaction," coining the word "compluetic" from the two words "complement" and "luetic."

TRICHINOSIS AND NEOSALVARSAN.

IT has hitherto been supposed that no direct measures could have any beneficial influence upon the trichinæ when once the muscles had been invaded, but a striking case of, at any rate, immediate relief, following an intravenous injection of neosalvarsan, in a case of trichinosis is reported in the *Journal of the American Medical Association* (1916, lxvii., p. 1086) by Dr. J. B. McNerthney and Dr. W. B. McNerthney. The patient was a German, aged 33. He had eaten for some days some undercooked ham, and was in the fifteenth week of the infection when admitted into hospital. He was greatly emaciated, prostrated, and had lost 60 lb. in weight. The temperature was 100° F. The forearms were flexed; restriction of movements at the wrist; rigidity of the neck muscles and even difficult deglutition. The lower limbs showed cyanosis and œdema. There was severe anæmia and the eosinophiles were increased to 35 per cent. A section of muscle fibre showed numerous living trichinæ in every field. An intravenous injection of 0·6 gramme[1] neosalvarsan was given. A marked chill followed, but within 48 hours the patient felt less pain than he had had for months. Within a week he was able to sit in a chair and could extend his forearms. Complete and uneventful recovery followed. This is a striking therapeutic triumph in one instance, and its effects in other cases will be awaited with interest.

THE TREATMENT OF PROSTATIC HYPERTROPHY BY NERVE-SECTION.

AMONG the papers read to the members of the Dutch Medical Association at the summer meeting at Leyden was one[2] by Dr. D. Schoute on the treatment of hypertrophy of the prostate by section of the nerves in the spermatic cord. The idea of the treatment was suggested to Dr. Schoute by the

[1] The authors write 0·06 gramme but from the references given and the absence of any remark calling attention to the minuteness of the dose, it would seem that 0·6 gramme is intended.

[2] Nederl. Tijdschr. voor Geneesk., Amsterdam, 1916, i., 1356.

rapid relief from retention of the urine that sometime follows the operation of castration. This led him to treat a patient with hypertrophied prostate who was suffering from retention by injecting novocaine into the spermatic cord in order to cut off the transmission of nervous impulses from the testes to the prostate. The injections were successful, as they relieved the retention by enabling the patient to pass urine again; but they failed in so far as they required repetition every three hours, by which time their effects had passed off. The operation proposed by Dr. Schoute aims at exposing the spermatic cord, separating off the vessels and vas deferens, and cutting through the tissues of the cord that remain. Discussing his results, Dr. Schoute remarks that he finds it convenient to divide up his prostatic patients into two classes, irrespective of the stage they had reached—namely, those without and those with prostatic pains. He has applied his operation in 31 cases of hypertrophy of the prostate with retention of urine or residual urine. So far as his classification goes, 17 of the patients had severe prostatic pain (9 with cystitis or prostatitis), 12 had little or no pain (3 with slight cystitis), and 2 were dements whose sensations could not be ascertained. Six of his patients died within three weeks of the operation; all were cases with complete retention. The operative results are set out with the patients in three groups. Group A contains 5 patients who had pain and complete retention; 2 were cured, 2 were unimproved, and 1 died. Group B comprises 12 patients with pain and residual urine amounting to from 1 to 18 oz.; 5 were cured, 2 improved, 3 unimproved, and in 2 the results were uncertain. Group C contains 12 patients without pain, but with complete retention; 9 were cured by the operation; 3 died. Both the dements, who also were hemiplegic, died. Dr. Schoute concludes that this operation is indicated for the relief of patients with hypertrophy of the prostate who do not suffer from severe prostatic pains, adding that cystitis and prostatitis lessen the probability that it will be successful. The operation is not found to disturb the sexual functions; Dr. Schoute has not observed it to lead to a reduction in the size of the hypertrophied prostate. A discussion followed the reading of this paper; the opinions expressed as to the value of the operation advised by Dr. Schoute were unfavourable. Dr. Van Cappellen had performed it in 12 cases without a single successful result; Dr. Vermeij and Dr. Montaigne each had two cases to record, all of them unsuccessful. Dr. Laméris observed that the operation had been tried 20 years ago, and had then been found wanting; he criticised Dr. Schoute's classification of his patients and the scarcity of the clinical details of his cases. Dr. Sträter remarked on the high immediate mortality of the operation—6 deaths among 31 patients. In the course of his reply Dr. Schoute said that it often was very difficult to free the spermatic artery from the cord, and expressed the belief that the treatment of prostatic hypertrophy by section of the vas deferens was a failure if nothing more than the vas was divided.

AT a meeting of the Medical Society of London to be held on Monday next, Nov. 13th, at 8.30 P.M., Captain Langdon Brown, R.A.M.C. (T.), will open a discussion on "Epidemic Nephritis." Among others, the following have promised to take part in the discussion: Sir William Osler, Lieutenant J. S. Dunn, R.A.M.C., Dr. Samuel West, Mr. J. E. Adler, Mr. W. H. Jessop, and Dr. T. J. Horder.

REPORT OF THE COUNTY MEDICAL OFFICER OF HEALTH AND SCHOOL MEDICAL OFFICER OF LONDON FOR 1915.[1]

THE present is Dr. W. H. Hamer's fourth annual report in his dual capacity as medical officer of health and school medical officer. It relates to the year 1915 and gives account of the sanitary and educational work of the County Council in relation to the war. As in previous reports, the subject-matter is arranged under two headings, dealing respectively with Public Health and Elementary Education. In the following comments we shall adhere to the same arrangement.

PART I.—PUBLIC HEALTH.

In this section of his report Dr. Hamer acknowledges that "the health of London during 1915 does not compare very favourably with that of quite recent years—not so much on account of any influence of the war as owing to increase of deaths at relatively high ages attributable to a prevalence of influenza and respiratory diseases during the winter months." In many respects this report is very encouraging, inasmuch as it confirms the evidence of previous years as to steady and substantial administrative progress. In spite of difficulties inseparable from existing war conditions, a commendably high standard of efficiency continues to be maintained in the sanitary service of the county. Nevertheless, Dr. Hamer rightly insists that exceptional efforts are still needed in order to deal satisfactorily with war emergencies, which, far from diminishing, still threaten to increase *pari passu* with the duration of hostilities. At the date of the report five metropolitan medical officers of health and 53 sanitary inspectors had already been detached for war service. The inspecting staff was therefore depleted to the extent of 16 per cent. Probably for reasons of economy the tabular portions of this report have been curtailed. Nevertheless, all that is essential in the statistical contents of previous reports has been continued in the summary tables now presented, for the means of compiling which Dr. Hamer acknowledges his indebtedness to the district medical officers of health.

Population changes.—In the course of 1915 the population of London experienced important changes, not only in respect of number, but of age and sex constitution and local distribution. Consequently it has become necessary to calculate mortality rates upon a population from which deduction has been made for men on active service, the deaths having been similarly reduced so as to relate to civilians exclusively. The total civil population was estimated at 4,310,030. In order to obtain data relating to this number the deaths among members of His Majesty's forces have been excluded, and the rates for the civil population thus computed. The rates now given are the best that can be obtained in present exceptional circumstances, but caution is obviously requisite in comparing these with the rates of normal years. The civil population is deficient in males of military ages (from 19–40 years), at which time of life mortality is considerably below that of the normal aggregate population. For this reason the rates calculated on the civil population are to some extent overstated.

Marriage-rate.—The metropolitan rate of marriages has been rising almost steadily for several years, the rate having increased from 16·9 in 1909 to 19·2 in 1914. The estimated *civil population* cannot properly be used for calculating the marriage-rate, since the numbers married include many men on active service. But, taking a *probable population* of 4½ millions the rate for 1915 would be 25·9 per 1000, which is the highest rate on record. The bulk of this exceptional increase is directly attributable to the war. It is believed, however, that a considerable number of persons registered as married in London were not actually resident in the county.

Birth-rate.—A serious fall in the birth-rate of London still continues. It was 23·6 in the year under notice, against an average of 25·0 in the quinquennium 1909–13. Dr. Hamer devotes considerable attention to the steady fall of the birth-rate, which has been practically continuous for the last 40 years. A theory which has met with some acceptance ascribes this—not to natural causes, such as the high

[1] Published by King and Son, Westminster. Pp. 40. Price 1*s*.

rate of marriages, economic factors, emigration, &c.—but to the artificial limitation of families. One of the most cogent reasons against this theory is the fact that the fall is widespread throughout Europe, and affects certain other civilised communities. In this connexion the medical officer of health quotes Mr. Udny Yule, who has long been engaged on a critical study of the subject. In a recent communication this expert statistician has observed:—

It was precisely the extraordinary similarity of the changes in very widely different countries that made it very difficult for him to accept the purely moral theory. If there had been a change in that way—and possibly it was the case—why did the changes take place in so many different countries in almost the same year? People did not change their morality in a large number of different countries, or even in one country, at a given point of time without some extremely definite cause, and ..... he was still inclined to regard economic factors of some kind as lying behind it.

For the purpose of his study Mr. Yule examined various economic factors—wages, consumption of commodities, exports and imports, &c.—and was led to attach special importance to the correlation of the marriage- and birth-rates with the course of prices. He concludes:—

I feel myself almost compelled to the belief that the course of prices, either directly by its influence on consuming power and on profits, indirectly by effects on trading, or more indirectly (if it be possible) as an index to the course of some other variable, has been throughout the past century the factor of most outstanding importance in the rate of reproduction of the race.

This controversy is by no means settled, and, having regard to its vital importance, we shall welcome further discussion of the subject.

Deaths and causes of mortality.—Calculated on the estimated civil population the deaths among civilians in the administrative county were equal to a rate of 16·8 per 1000 living, as compared with 14·6 in the year 1914. The increased deaths appear to be due in greater degree to unfavourable weather in the winter of 1915 than to excess of deaths at military ages attributable to the war. The increased mortality among children under 5 years was mainly due to measles and respiratory affections in the winter months, whilst at ages above 55 influenza, with its chest complications, was responsible for the greater part of the increase.

Infectious Diseases.

The incidence and fatality of the more familiar infectious diseases are set forth in detail in the periodical returns of the Registrar-General; they are therefore dealt with summarily in the present report. *Measles* was a notifiable disease last year in Paddington only. The deaths in London from that disease numbered 2286, or 910 more than in 1914. The incidence of measles appears to have been exceptionally heavy upon the Western and South-Western boroughs. The civilian cases of *scarlet fever* notified last year numbered 16 974, and were fewer by 8041 than the number in 1914. The decreased prevalence of this disease was shared by each of the metropolitan boroughs with the exception of Shoreditch and Bethnal Green, where the cases were greatly in excess. The notified civilian cases of *diphtheria* numbered 9094 or almost exactly the same as in the preceding year. In London as a whole the prevalence of diphtheria appears to rise and fall with that of scarlet fever; but this is not true of the metropolitan areas separately. In 27 out of the 29 boroughs the scarlet fever cases notified last year showed a marked decline as compared with 1914, but in the case of diphtheria only 16 showed a decline. This difference is apparently associated with greater tendency to persistence in particular places in the case of diphtheria as compared with scarlet fever. *Whooping-cough* was a notifiable disease last year in Holborn, Lambeth, and Greenwich; the deaths in London from this disease numbered 1158, or 237 more than in 1914.

Enteric fever.—Since the beginning of the century the incidence has been low in London, especially in the last ten years. The decrease observed in London has not been confined to that county, or indeed to England and Wales. Speaking generally it appears to have been common to most European countries. During the first half of the period elapsed since 1900 the marked autumnal rise previously manifested from year to year has steadily diminished in extent, and since 1908 it has been evident in two years only. The first year of this series of 15, in which a marked failure occurred in the usual autumnal prevalence, was 1907, the autumnal excess being then smaller than in any previous year back to the introduction of notification. Since 1911 it has almost entirely disappeared. Notwithstanding the return to this country of convalescent soldiers and the concomitant abnormal conditions of the time, no increase in prevalence of enteric fever was observed last year. The number of attacks notified among civilians was 607, and was considerably below the number reported in 1914. From inquiries made it appears that fewer than 20 deaths from enteric fever occurred during the year among the military population of London; from which circumstance it may be inferred that if the whole of the military cases had been notified the total attacks in London during 1915 would still have been substantially fewer than in the preceding year. As in past years, Dr. Hamer has again been eager to obtain information respecting the suspected sources of infection in the reported cases, and in 380 instances he has been materially assisted by his district medical colleagues. The information thus acquired threw suspicion upon food (fish, shell-fish, &c.) in 143 cases, in 55 of which the patients were soldiers and in 5 Belgian refugees. In 43 cases infection appears to have been contracted outside London, and 57 cases were ascribed to contact infection; whilst in 74 instances the diagnosis of enteric fever was found incorrect. Dr. Hamer does not neglect to caution his readers that "in all these instances the grounds upon which the suspicions as to origin were based must be regarded as having only some degree of probability far removed in many instances from certainty."

Cerebro-spinal fever and influenza.—The order of the County Council requiring the notification of cerebro-spinal fever came into operation in 1907, since which date considerable attention has been directed to the etiology of that condition. During the seven years following the introduction of this measure the disease did not assume epidemic dimensions. In his last two reports Dr. Hamer has devoted considerable space to an examination of its probable relationship to influenza. In the first of these the attempt was made to discover whether the concurrence of influenza and cerebro-spinal fever was more frequent than mere chance coincidence would account for. The answer, it will be remembered, was in the affirmative.[2] In the last Army and Navy Report reference has been made to this subject. In that document Surgeon-General H. D. Rolleston remarks upon the coincidence with the outbreak of cerebro-spinal fever in 1915 of catarrh, influenza, tonsillitis, and sore-throat. He concludes that there appears to be a relation between the incidence of catarrhal affections on the one hand and of cerebro-spinal fever on the other. Further reports on the same subject are cited—one by Dr. Bruce Low and another by Captain Michael Foster and Captain J. F. Gaskell, of the Eastern Command. The last-named observer concludes that mild cases of cerebro-spinal fever may be unrecognised and classed as influenza, but that no proof exists that the former disease is ever so slightly marked as not to develop at least some of the diagnostic signs. This subject is of particular importance at the present time, in the interest not only of the civil community but of His Majesty's Forces at home and abroad. We therefore commend Dr. Hamer's instructive observations to the study of our medical readers.

Pulmonary tuberculosis.—Among the civilian population the deaths thus returned last year corresponded to a rate of 1·60 per 1000. This rate is not fairly comparable with that of 1·43 for 1914, when the age composition of the community was normal. Recruitment for the war reduced the proportion of healthy males aged 19–40, leaving in the civil population all those who had been rejected on account of phthisis, the result being to overstate the mortality based on the civil population when contrasted with that of the previous year. The increase in 1915 cannot properly be attributed to the war, for excessive mortality is also shown at ages both below and above the years of active service. In the year under notice 14,712 cases of phthisis, or 1755 fewer than in 1914, were notified in London. Systematic notification was not established until 1913, consequently uncertainty attaches to comparison of the returns; moreover, at the outset all cases, however far advanced, were notifiable as "primary," and some old-standing cases may in that way have escaped notification.

Anthrax.—This disease is of very rare occurrence in London, the reported cases in human beings having never exceeded nine in any year of the last five. Early in 1915

[2] See THE LANCET, April 15th, 1916, p. 833.

seven cases of human anthrax were reported. Infection by anthrax spores was traced to the use of shaving brushes made from goats' hair which had been consigned from abroad to a manufacturer in the Midlands, who used the hair for making shaving brushes.[3] These are the first known instances of anthrax being traced to infection from shaving brushes; and but for the timely discovery of Dr. R. R. Elworthy, of the West London Hospital, and the administrative action subsequently taken, an outbreak of more serious dimensions might have occurred. As many of the infected brushes as could be discovered in London were collected and dealt with by the metropolitan medical officers of health, but a large number appear to have been distributed to dealers, both in the provinces and on the continent, and could not be traced.

(To be concluded.)

THE CONTROL OF VENEREAL DISEASES.

The Resolutions of the Royal College of Physicians of London.

AT the Comitia of the Royal College of Physicians of London held on Oct. 26th two valuable resolutions with reference to the control of venereal diseases were passed,[1] copies of which have been sent to the Prime Minister, the Home Secretary, and the President of the Local Government Board. The first of these resolutions set out the opinion of the College that until the treatment of these diseases by unqualified persons is rendered illegal the measures for their control will be much hampered; the second was directed towards the prevention of the main inducement for the public to consult quacks and to try quack remedies—viz., the advertisements in lay papers. The resolution of the College took the form of an endorsement of recommendation 58 (iii.) of the Patent Medicines Committee of the House of Commons, which runs as follows:—"That all advertisements of remedies for diseases arising from sexual intercourse or referring to sexual weakness be prohibited." This recommendation has received the support of the Royal Commission on Venereal Diseases, and it is earnestly to be hoped that the Government will recognise the urgency of the situation. A great effort is being made, in unusually favourable circumstances, to remove the curse of these diseases from our population. Public money is to be spent with unprecedented generosity in carrying out immediately the recommendations of the Royal Commission on Venereal Diseases, and already the medical profession and the municipal authorities of many areas are organising the beneficent work. No factor which is generally and authoritatively acknowledged to be opposing the movement for the control of venereal diseases should be allowed to exist when it can be eliminated with ease.

The Scottish Regulations.

The Local Government Board for Scotland has, after three months' interval, followed the example of the English Board and issued regulations dealing with the treatment of venereal diseases. The Order bears the heading, "The Public Health (Venereal Diseases) Regulations (Scotland), 1916," is dated Oct. 26th, 1916, and is issued "to all local authorities in Scotland: and to all others whom it may concern." It differs only in minor details from the English Order, and directs that every local authority shall prepare and submit a scheme for the approval of the Board arranging for (1) a scientific report on material sent by medical practitioners for diagnosis; (2) the treatment in hospitals or other institutions or in their homes of persons suffering from venereal diseases; (3) skilled assistance in treatment to be placed at the disposal of practitioners; and (4) the supply to practitioners of salvarsan or other drugs for the treatment and prevention of venereal diseases. The local authority may make what provision it thinks desirable for public instruction. The Board undertakes to make grants in respect of approved schemes to the amount of 75 per cent. of the net outlay.

In a covering letter addressed to the clerk of the local authority the Board expresses its willingness to give the assistance and advice of one of its medical inspectors to any medical officer of health desiring such help, and suggests the desirability of combination among local authorities for carrying out schemes. In another letter addressed to the secretary of the hospital, the Board trusts that hospital authorities will be willing to confer with local authorities in their area with regard to arrangements for treatment; any extra expenditure incurred in providing additional hospital facilities will be borne by the local authority, and while in so doing the hospital will be under the inspection of the Board, no interference in the administration of the hospital is contemplated. In case of shortage of medical staff the Board has received the assurance of the Army Council that wherever possible specially experienced officers of the Royal Army Medical Corps will be enabled to give such assistance at hospitals as their military duties permit. In a third letter addressed to the inspector of poor, the Board proposes to make grants in respect of special expenditure incurred by Poor-law authorities in carrying out treatment in their institutions, provided that a statement of the nature and extent of such treatment is submitted and approved. Appendices attached to the memorandum include excerpts from the Report of the Royal Commission and from the technical parts of Dr. Newsholme's memorandum issued by the English Board.

The Remuneration of Medical Officers of Treatment Centres.

The Council of the British Medical Association has drawn up a series of resolutions in regard to the remuneration of the medical officers attached to the proposed clinics for venereal diseases. These resolutions, which have been circulated to the branches for adoption by the next Representative Meeting, are as follows:—

1. That whole-time senior medical officers of clinics should be appointed in country areas only where the work cannot be distributed among the members of the local profession.
2. That the remuneration of part-time clinical assistants of clinics should not be less than £1 1s. per session (not exceeding 2½ hours).
3. That the remuneration of part-time senior medical officers of clinics be: In London (for one or two sessions per week not exceeding 2½ hours), £3 3s. per session, (for three or more sessions per week) £2 12s. 6d. per session; in the provinces £2 2s. and £1 11s. 6d. respectively per session.
4. That commencing salaries of whole-time senior medical officers of clinics be not less than £750 per annum, exclusive of travelling expenses.
5. That a whole-time assistant to a part-time senior medical officer be paid not less than £350 per annum, if non-resident, exclusive of expenses.

Conference at Bangor.

A conference of medical men of the North Carnarvonshire and Anglesey areas took place last week at Bangor to consider local schemes for the diagnosis and treatment of venereal diseases. Dr. Marion E. Mackenzie occupied the chair and an address was given by Major G. M. Dobson, R.A.M.C. A resolution in favour of compulsory notification, proposed by Dr. James Craig, was withdrawn, and support promised to the Local Government Board scheme.

THE SERVICES.

THE INDIAN MEDICAL SERVICE.

NOMINATIONS FOR APPOINTMENTS.

IT has been announced in the press that after the open competitive examination held in July, 1915, for admission to the Indian Medical Service no similar examination would be held during the continuance of the war, but that such appointments as might be required to meet the absolutely indispensable needs of the service would be made by nomination by the Secretary of State. To assist him in making these appointments which, as already announced, will be limited in number to the absolutely indispensable needs of the service, Mr. Chamberlain has appointed a selection committee who will summon and interview such applicants as may appear to be *primâ facie* suitable, and make recommendations for appointment. Applications for appointment should be addressed to the Secretary of the Military Department, India Office, Whitehall, S.W., and should contain concise particulars of the applicant's medical degrees and career. Applicants must be over 21 and under 32 years of age at the time of application. Particulars regarding pay, promotion, &c., in the service can be obtained from the Secretary, Military Department.

ROYAL NAVAL MEDICAL SERVICE.

The following appointments have been notified:—Staff-Surgeon: W. N. L. Cherry to *Victory*, additional, for disposal. Surgeons: A. Simpson to *Victory*, additional, for disposal; G. E. D. Ellis to *Wildfire*, for Sheerness Barracks

[3] THE LANCET, Jan. 1st (p. 20) and 29th (p. 242), 1916.
[1] THE LANCET, Nov. 4th, 1916, p. 801.

and Yard; and W. E. Lloyd to *Diamond*. Temporary Surgeons: W. B. Gabriel to *Pembroke*, additional, for Chatham Hospital; and W. H. Coldwell and F. M. Allchin to *Victory*, additional, for Haslar Hospital.

Surgeons to be Staff-Surgeons: T. R. L. Jones, J. H. Burdett, A. V. J. Richardson, and G. R. McCowen.

To be temporary Surgeons: W. H. Blackburn, W. J. Colborne, and J. F. Haynes.

ARMY MEDICAL SERVICE.

Lieutenant-Colonel W. Pasteur, R.A.M.C. (T.F.), to be temporary Colonel and Lieutenant-Colonel M. MacG. Rattray to be temporary Colonel whilst Assistant Director of Medical Services of a Division.

ROYAL ARMY MEDICAL CORPS.

C. J. S. Stewart, C.A.M.C., from Honorary Major, to be temporary Captain.

Temporary Captain J. A. Turner, C.I.E., relinquishes his commission.

Temporary Lieutenants to be temporary Captains: T. D. Miller, T. H. Harker, W. H. Whitehouse, R. Brookes, C. A. Verge, and J. C. Bawden.

To be temporary Captains: J. R. Irwin, C.A.M.C. (late Lieutenant, R.A.M.C.), and J. D. Bruce, C.A.M.C.

Captain L. J. Violette, C.A.M.C., relinquishes his temporary commission on account of ill-health.

Temporary Lieutenants relinquishing their commissions: J. J. M. Dowzer, J. F. Adamson, A. Ross, P. N. Allman, and A. W. Wakefield.

To be temporary Lieutenants: H. Bowring, A. P. Piggot, T. G. Fenton, C. Duncan, F. J. Lennan, S. W. H. Stuart, R. A. Smith, R. Calleya, T. Clapperton, J. Geoghegan, J. Rickards, J. S. Strachan, Temp. Hon. Lieut. G. C. Hartley, C. T. MacL. Plowright, W. McAlpine, A. J. Macvie, D. N. Anton, G. W. Bury, Temp. Hon. Lieut. W. A. Hotson, H. J. Simson, J. L. Scott, R. J. McFeeters, T. Waterhouse, D. F. Riddell, M. F. Tylor, M. H. Laslett, C. Hackney, W. J. Smyth, W. H. Canter, C. R. Brown, H. Goodale, C. C. Fissette, J. R. Anderson, F. B. Macdonald, P. A. Storey, R. J. Gordon, H. Heathcote, S. H. Ryan, R. W. Nairn, S. A. Owen, T. B. Sellors, W. S. Wildman, F. J. Spilsbury, J. M. Christie, J. S. Young, D. C. P. Taylor, T. E. Flitcroft, J. F. H. Stallman, C. J. N. Longridge, and A. I. Simey.

E. G. Grove to be Temporary Lieutenant whilst employed at the Lord Derby War Hospital.

R. H. Campbell to be temporary Honorary Captain whilst employed at the British Red Cross Hospital, Netley.

Temporary Honorary Lieutenant R. Marshall to be temporary Honorary Captain.

TERRITORIAL FORCE.

Highland Field Ambulance; Lieutenant B. L. Davis to be Captain.

East Lancashire Field Ambulance: Lieutenant E. Hulme to be Captain.

London General Hospital: Lieutenant-Colonel W. Pasteur is restored to the establishment and seconded whilst holding a commission as temporary Colonel, Army Medical Service.

London Field Ambulance: Lieutenant O. Gleeson to be Captain.

London Sanitary Company: Lieutenant J. Inglis to be Captain.

Home Counties Field Ambulance: Captain (temporary Major) T. H. Chittenden, from Attached to Units other than Medical Units, to be Captain.

West Riding Field Ambulance: Captain H. H. Emmerson resigns his commission.

Northern General Hospital: Captain W. E. F. Tinley, from Attached to Units other than Medical Units, to be Captain, whose services will be available on mobilisation. Captain W. E. F. Tinley to be Major on the permanent personnel.

Attached to Units other than Medical Units.—Captain F. Philip to be temporary Major whilst acting as Registrar of a General Hospital.

JOURNAL OF THE ROYAL ARMY MEDICAL CORPS.

The first article in the current issue of this journal is contributed jointly by Mr. Albert Morison, honorary surgeon to the Red Cross Hospital, Sunderland, and Lieutenant William J. Tulloch, lecturer in bacteriology at the University of St. Andrews, and deals with the treatment of wounds in war by magnesium sulphate. The article, which is illustrated with coloured plates, while emphasising the utility of $MgSO_4$ as a curative dressing, does not suggest its use as a first dressing for fresh wounds. Dr. I. Walker Hall and Dr. B. A. I. Peters, with the assistance of Mr. F. Nicholls, discuss in a joint paper the changes in the agglutinability, fermentation reactions, and absorptive capacities of the meningococcus during the active attack; Captain T. S. Allen relates some interesting experiences of X ray work in France; and Lieutenant-Colonel Netterville Barron, M.V.O., has a thought-compelling note in regard to physical training with especial reference to the training of convalescents. The subject is an important one both in its bearing on the rapid return to the firing line of men who have been wounded, and on the cure of the convalescent soldier after the war. Captain H. L. Tidy and Lieutenant I. P. S. Dunn discuss the differential bactericidal values of malachite and brilliant green for the typhoid-coli group, and Captain T. H. Whittington publishes a report on the use of stock vaccine in infection by the bacillus typhosus, with an analysis of 230 cases.[1]

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.

In the 96 English and Welsh towns with populations exceeding 50,000 persons at the last Census 7462 births and 4182 deaths were registered during the week ended Saturday, Nov. 4th. The annual rate of mortality in these towns, which had been 12·2, 11·8, and 12·9 per 1000 in the three preceding weeks, fell in the week under notice to 12·6 per 1000 of their aggregate civil population estimated at 17,312,295 persons for the year 1915. During the first five weeks of the current quarter the mean annual death-rate in these towns averaged 12·4, against 12·1 per 1000 in London. Among the several towns the death-rate last week ranged from 3·2 in Ilford, 5·5 in Wimbledon, 6·6 in Lincoln and in Swansea, 6·8 in Enfield, and 7·0 in Ipswich, to 17·1 in Nottingham, 17·3 in Darlington, 18·1 in Bury, 19·1 in Bradford, and 19·3 in Norwich.

The 4182 deaths from all causes were 86 below the number in the previous week, and included 229 which were referred to the principal epidemic diseases, against 306 and 316 in the two preceding weeks. Of these 229 deaths, 131 resulted from infantile diarrhœal diseases, 39 from diphtheria, 22 from measles, 20 from whooping-cough, 12 from scarlet fever, and 5 from enteric fever, but not one from small-pox. The annual death-rate from these diseases was equal to 0·7, against 1·0 per 1000 in the previous week. The deaths of infants (under 2 years) from diarrhœa and enteritis, which had declined from 477 to 221 in the seven preceding weeks, further fell to 131, and included 31 in London, 13 in Liverpool, 11 in Manchester, 10 in Birmingham, and 9 in Leeds. The deaths referred to diphtheria, which had been 45, 40, and 53 in the three preceding weeks, declined to 39, of which 12 occurred in London, and 3 each in St. Helens and Manchester. The fatal cases of measles, which had decreased from 25 to 13 in the four preceding weeks, rose to 22; 5 deaths were registered in London and 2 each in West Ham, East Ham, Birmingham, and Sheffield. The deaths attributed to whooping-cough, which had been 23, 10, and 13 in the three preceding weeks, rose to 20, and included 4 in Birmingham, 3 in Liverpool, and 2 each in St. Helens and Cardiff. The deaths referred to scarlet fever, which had declined from 13 to 5 in the four preceding weeks, rose to 12, of which 3 occurred in Liverpool. The fatal cases of enteric fever, which had been 11 in each of the two preceding weeks, fell to 5, and included 2 in Burnley.

The number of scarlet fever patients under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital, which had been 1074, 1067, and 1130 at the end of the three preceding weeks, further rose to 1141 on Saturday last; 146 new cases were admitted during the week, against 167, 125, and 197 in the three preceding weeks. The cases of diphtheria, which had increased from 1262 to 1490 in the seven preceding weeks, further rose to 1528; 186 new cases were admitted during the week, against 194, 188, and 231 in the three preceding weeks. These hospitals also contained on Saturday last 62 cases of measles, 47 of enteric fever, and 39 of whooping-cough, but not one of small-pox. The 1054 deaths from all causes in London were 1 in excess of the number in the previous week, and corresponded to an annual rate of 12·8 per 1000. The deaths referred to diseases of the respiratory system, which had been 132, 132, and 142 in the three preceding weeks, further rose to 164 in the week under notice.

Of the 4182 deaths from all causes in the 96 towns, 182 resulted from violence, 382 were the subject of coroners' inquests, and 1283 occurred in public institutions. The causes of 41, or 1·0 per cent., of the total deaths were not certified either by a registered medical practitioner or by a coroner after inquest. All the causes of death were duly certified in Leeds, Bristol, West Ham, Newcastle-on-Tyne, Hull, and in 71 other smaller towns. Of the 41 uncertified causes, 7 were registered in Birmingham, 6 in Liverpool, 3 each in London, Bootle, and Gateshead, and 2 each in Manchester, Preston, Middlesbrough, and Darlington.

HEALTH OF SCOTCH TOWNS.

In the 16 largest Scotch towns with an aggregate population estimated at 2,372,000 persons at the middle of this year 1000 births and 633 deaths were registered during the week ended Saturday, Nov. 4th. The annual rate of mortality in

[1] See THE LANCET, vol. i., 1916, pp. 759 et seq.

these towns, which had been declined from 15·1 to 12·9 per 1000 in the four preceding weeks, rose to 13·9 per 1000 in the week under notice. During the first five weeks of the current quarter the mean annual death-rate in these towns averaged 13·7, against a corresponding rate of 12·4 per 1000 in the large English towns. Among the several towns the death-rate last week ranged from 7·2 in Perth, 7·4 in Motherwell, and 8·9 in Kirkcaldy, to 17·1 in Ayr, 17·3 in Aberdeen, and 18·4 in Leith.

The 633 deaths from all causes were 46 above the number in the previous week, and included 51 which were referred to the principal epidemic diseases, against 53 in each of the two preceding weeks. Of these 51 deaths, 18 resulted from infantile diarrhœal diseases, 11 from measles, 10 from diphtheria, and 4 each from enteric fever, scarlet fever, and whooping-cough, but not one from small-pox. The death-rate from these diseases was equal to 1·1, against 0·7 per 1000 in the large English towns. The deaths of infants (under 2 years) from diarrhœa and enteritis, which had declined from 66 to 19 in the four preceding weeks, numbered 18, and included 6 in Glasgow, and 2 each in Edinburgh, Dundee, Leith, and Coatbridge. The deaths referred to measles, which had been 16, 2, and 18 in the three preceding weeks, fell to 11, and comprised 8 in Dundee, 2 in Glasgow, and 1 in Edinburgh. The fatal cases of diphtheria, which had been 4, 12, and 4 in the three preceding weeks, rose to 10, and included 3 each in Glasgow and Aberdeen. Of the 4 deaths from enteric fever, 2 occurred in Glasgow and 2 in Kilmarnock. The deaths attributed to scarlet fever, which had been 7, 3, and 5 in the three preceding weeks, were 4 last week, but showed no excess in any particular town. The 4 fatal cases of whooping-cough were slightly in excess of the average in the earlier weeks of the quarter.

The deaths referred to diseases of the respiratory system, which had been 90, 74, and 87 in the three preceding weeks, rose to 95 in the week under notice, but were 55 below the number registered in the corresponding week of last year. The deaths from violence numbered 25, against 26 and 30 in the two preceding weeks.

HEALTH OF IRISH TOWNS.

In the registration area of Dublin 187 births and 121 deaths were registered during the week ended Saturday, Nov. 4th. The annual rate of mortality, which had been 17·7, 17·5, and 18·7 per 1000 in the three preceding weeks, fell to 15·9 in the week under notice, against 12·8 and 13·3 per 1000 in London and Glasgow respectively.

The 121 deaths from all causes included 30 of infants under 1 year and 26 of persons aged 65 years and upwards. Five deaths (of infants under 2 years) were referred to diarrhœal diseases and 3 to enteric fever. The causes of 12 deaths were uncertified, and those of 2 others were the subject of coroners' inquests, while 33, or 27 per cent., of the total deaths occurred in public institutions.

During the same period 135 births and 119 deaths were registered in the city of Belfast. The deaths corresponded to an annual rate of 15·9, against 15·8 per 1000 in the previous week, and included 21 of infants under 1 year and 32 of persons aged 65 years and upwards. Four deaths (of infants under 2 years) were referred to diarrhœal diseases and 1 to whooping-cough. The causes of 3 deaths were uncertified, and those of 3 others were the subject of coroners' inquests, while 31 of the total deaths occurred in public institutions.

CLERICAL, MEDICAL AND GENERAL LIFE ASSURANCE SOCIETY.—At the 92nd annual meeting of this society, held at the offices in St. James's-square, S.W., on Nov. 3rd, a satisfactory report was submitted. The report showed that after providing over half a million sterling for depreciation and war claims, a 2½ per cent. valuation had been maintained, and £197,602 additional reserves had been laid by. The bonus available for distribution was equal to that of 1911, the largest in the history of the society. The net new business, though checked by the war, had increased from £672,732 to £737,472.

MANCHESTER BABIES' HOSPITAL.—A pamphlet of 44 pages contains the monthly reports from August, 1915, to July, 1916, of the Manchester Babies' Hospital at Slade-lane, Levenshulme, signed by the medical registrar, Dr. Gertrude H. Hickling. Ninety-four babies (50 male, 44 female) were admitted during the year; on account of acute gastro-enteritis (9), chronic dyspepsia and mal-nutrition (83). Two were found normal after admission. During the year 60 were discharged improved, 2 were transferred, 2 were taken home by their parents, and 4 were discharged unimproved on account of whooping-cough. Thirteen babies died; of the deaths 5 were from generalised tuberculosis. The age varied from less than one month to 12 months; the large majority being between two and six months. The average duration of stay in the hospital was 76 days. The cases admitted were not selected, but were taken in whenever there was a vacancy at the request of infant welfare centres, the medical officer of health, or private doctors.

Correspondence.

"Audi alteram partem."

THE EDITH CAVELL HOMES OF REST FOR NURSES.

To the Editor of THE LANCET.

SIR,—An appeal to the public is now being made on behalf of these homes. They are urgently needed, so that the noble women who work in our hospitals in these days of stress may, when overwrought, obtain a much-needed rest. Those of us who have to deal with hospitals are only too painfully aware how pressing this need is becoming. Some officers who have benefited by the unselfish ministration of these devoted women have from time to time expressed to me their desire that a channel might be provided through which either officers or those in the ranks could give practical expression to their gratitude according to ability, and I venture to think that the project to establish homes of rest for nurses in memory of Edith Cavell offers to them an ideal opportunity for fulfilling their wish.

May I hope, therefore, that the appeal now being made may meet with the ready and generous response from our military forces which it deserves, and that subscriptions will flow in to the honorary secretary of the Edith Cavell Homes of Rest for Nurses, 25, Victoria-street, Westminster, S.W.

I am, Sir, yours faithfully,

DOROTHY HAIG.

St. James's Court, Buckingham Gate, S.W., Nov. 4th, 1916.

MASSAGE AND MEDICAL ELECTRICITY IN THE AFTER-TREATMENT OF CONVALESCENT SOLDIERS.

To the Editor of THE LANCET.

SIR,—Dr. Florence Lambert's report in your issue of Nov. 4th demonstrates how necessary was the paragraph to which she takes exception. The military convalescent hospitals have nothing to do with the question, since they are designed for such sick and wounded as "are likely to become quite fit to return to an Expeditionary Force within a maximum period of six weeks." So her remarks on these are beside the point.

Regarding the Command Depôts, it is clearly of national importance that they should be equipped with every appliance which can reasonably be expected to lessen disability to the utmost extent in the briefest possible time. As a matter of fact, we know they are in certain instances far better equipped than, in order to push her own special views, she describes them. In one, at all events, Heaton Park, which was organised by a very able Canadian, Major Tait McKenzie, an admirable system of treatment, much on the lines of the Grand Palais in Paris, has been initiated, and is giving the good results which might be expected. In another, Ripon, I understand that similar methods, still further improved by the addition of diathermy, are being brought into use. But, unhappily, on the other hand, I hear of a third whose equipment and staff of masseuses is wholly inadequate.

Some of Dr. Lambert's inaccuracies need immediate correction. It is not correct to imply that the Grand Palais patients are not continuously treated or kept under proper discipline; she evidently has not read Dr. Camus's last report, issued in February. It is a pure assumption that the results of French massage are worse than those of English. It is untrue that the Zander treatment is used in Paris only because a trained body of gymnasts is not available; the Zander treatment (not, by the way, "unpopular," but nearly unknown, in England) is used for its obvious merits, which Dr. Lambert has, perhaps, not heard of, and skilled gymnasts are afterwards employed for the muscular re-education on which the French lay such stress and which Dr. Lambert seems to have misunderstood. It is sheer nonsense to say the *eau courante* bath is still on its trial, and will be so for two years, when its value has been thoroughly tested in France, and is being now recognised in this country by those who have observed its action. To compare it with massage exposes a degree of want of knowledge truly extraordinary, since its value is

that of a most successful adjuvant to massage. Some of us have been wondering what sort of "expert" advice our overworked War Office has been getting on these serious questions. Here is apparently one of the "experts," and our wonder lessens.

Happily better counsels are beginning to reach the official ear. In July, 1915, four months before the first general announcement of Command Depôts was made (although soon after a further official notice was issued stating that no special treatment was yet available), one of the secretaries went over to Paris to investigate, on behalf of the special committee of the Balneological Section of the Royal Society of Medicine (itself in close touch with the War Office), the remarkable results being obtained at the Grand Palais, and brought back a report which was communicated to the military authorities. In the following February the President of the section went to Paris, and, being afforded special facilities by the French authorities, was able to bring back a very full confidential report on the financial and scientific particulars necessary for the installation in this country on an adequate scale of the French system in order to compare its merits with those of our own procedures. This report was communicated to the War Office at once. Soon afterwards a small installation for officers was privately set up in London, which has been giving excellent results.

There can be no reasonable doubt that there are large numbers of disabled men, up and down the country, for whom an adequate system of physical treatment is not available, and whose disabilities are being allowed to persist in greater degree than would otherwise be the case. The question is now one for the Treasury, the Insurance Commissioners, and, above all, for the public. Are we, or are we not, to be allowed to give a fair trial to a method of treatment which has at least incontestably proved its claim to such a trial? As a student, more than a quarter of a century ago, I remember the lives which were lost by the reactionaries who did not believe in "microbes." Are we to have the lives of our splendid men rendered unnecessarily wretched by needless crippling to please a new generation of reactionaries? I commend Dr. Lambert's report to all who are in doubt.—I am, Sir, yours faithfully,

Exeter, Nov. 6th, 1916. W. GORDON.

To the Editor of THE LANCET.

SIR,—In an interesting account of the mechano- and electro-therapeutical departments at the Command Depôts and Convalescent Camps given by Dr. Florence Barrie Lambert in your issue of Nov. 4th, she has made one or two statements and implications which we think it our duty to correct.

Dr. Lambert states with reference to a paragraph quoted from a report of a subcommittee of the Committee of Council of the Section of Balneology and Climatology of the Royal Society of Medicine, that "it passes over as practically non-existent the splendid work of the Command Depôts and Convalescent Camps, chiefly because the *eau courante* bath has not been installed broadcast." This is far from accurate. The object of the Committee of Council since its formation in January, 1915, has been to further, by all means in its power, the employment and coördination of *all forms* of physical treatment for disabled soldiers, whether by means of hydrology, mechano- or electro-therapy, massage, or gymnastics. The committee has never urged the use of one form of treatment to the exclusion of another. The *eau courante* bath was recommended because it had been found a most useful adjunct to massage and mechanical movements, the beneficial effect of which has been shown to be greatly increased by the previous application of the *eau courante* bath. We should also like to point out that neither at Heaton Park Command Depôt, nor at the National Orthopædic Hospital in London, nor at the Red Cross Clinic for Physical Treatment for Officers in London is the Zander apparatus used only for giving *passive* mechanical exercises. The apparatus employed at these institutions and at the Grand Palais Hospital in Paris is used principally for active movements. The "good manual work" which Dr. Lambert so appreciates is very important, but, even when combined with electricity, it cannot replace all other forms of physical treatment.

When the committee was formed there is no doubt that this country had lagged behind both France and Germany with regard to physical treatment, but now, after the lapse of nearly two years, a great deal of satisfactory work is being done at Convalescent Camps, Command Depôts, and Red Cross institutions in this country. We must not, however, permit ourselves to become self-complacent, but continue to develop, improve, and coördinate all methods of physical treatment, old and new, so that no disabled soldier shall be able to say that he has not had every form of treatment likely to reduce his disability to a minimum on his return to civil life.

We are, Sir, yours faithfully,

SEPTIMUS SUNDERLAND,
London, W., Nov. 6th, 1916. J. CAMPBELL MCCLURE.

MANUFACTURE OF SALVARSAN PRODUCTS IN ENGLAND AND FRANCE.

To the Editor of THE LANCET.

SIR,—In reply to Captain W. d'Este Emery's and Captain J. Everidge's communication on this subject in your issue of Nov. 4th, I beg to state that since my letters to THE LANCET of April 3rd, May 1st, and May 8th, 1915, I have not drawn renewed attention to my unfortunate experiences with kharsivan for the excellent reason that I decided more than a year and a half ago to abandon its use for ever.

I did in THE LANCET of Sept. 30th last draw attention to the fact that in the space of a few weeks two inquests were reported in the daily papers of fatalities following injections of kharsivan at Guy's Hospital. This can hardly be called my unfortunate experience, but the cases were cited as a justification of the conclusions which I had arrived at, never in the future to employ this preparation.

I am, Sir, yours faithfully,

J. ERNEST LANE,
Queen Anne-street, W., Nov. 6th, 1916. Major, R.A.M.C. (T.),

To the Editor of THE LANCET.

SIR,—We have read with interest the letter from Captain d'Este Emery and Captain John Everidge, which you publish in your issue of Nov. 4th, and we are pleased to be able to state that our experience of kharsivan is in exact agreement with theirs. In therapeutic effect we regard the British product as identical with the German, and its use has never produced in our hands anything but the most beneficial results.

We are interested to notice that the technique of your correspondents is identical with that which we have followed for several years, and we are confident that were this technique followed carefully by all administrators of salvarsan or kharsivan ill-effects would entirely disappear.

Major Ernest Lane seems to have had some unfortunate experiences. It would be interesting to know if he personally supervises the preparation of all the solutions he uses in administering kharsivan.

We are, Sir, yours faithfully,

G. STOPFORD-TAYLOR.
Liverpool, Nov. 6th, 1916. R. W. MACKENNA.

THE ETHICAL STANDARDS OF PANEL PRACTICE.

To the Editor of THE LANCET.

SIR,—Dr. O. Eccles's letter in your issue of Nov. 4th provides food for reflection, for evidently Dr. Mitchell Bruce "knows something" if he said what is attributed to him. The point at the bottom is: the strain on ethical standards which is put on the conscientious panel doctor by the method at present in vogue. A big panel list is a commercial asset, by whatever means obtained, and it is not necessarily the best qualified doctor who gets the biggest panel. There are wheels within wheels, so to speak, and the public are no better judges of doctors than doctors are supposed to be of financial and general business undertakings. Anyway, a big panel list can only be properly supervised by neglecting private work. Since one is not likely to do this, the panel patient puts a great strain on one's ethical standard. He must be disposed of as quickly as possible, but *without offence*, and that for three reasons: 1. He may complain to his Insurance Committee and cause worry. 2. He may cease to recommend his present panel doctor. 3. He may have a family, who are private patients. And so if he alleges he is not fit for work and wants another

certificate, there is a great strain thrown on his panel doctor, and who shall blame him if the temptation is greater than he can bear? Some folk like temptation and court it, and boast how they have resisted it, but there generally comes a time when the resistance gives way. It is a question of human nature and human frailty—and I cannot see where Dr. Mitchell Bruce is wrong in calling attention to the fact, as Dr. Eccles puts it, that with regard to panel doctors "they are tempted by the conditions of panel practice." Contrast the position of the regimental M.O. in taking "sick parade" in the morning, where he sorts out the malingerers from the really sick, oftentimes a difficult task, but he is at a great advantage, being unhampered by temptation as to financial losses or future popularity.

This panel system has caused the medical profession to almost cease to be an "honourable profession," let alone a "noble profession," in the eyes of the public, and the sooner we recognise the fact that it should be carried on by whole-time men, paid by salary, and no temptations to trouble them, the better for everybody—insured, uninsured, and medical men. I write as an old Tory and as the result of experience of panel practice since the commencement of the National Insurance Act: thus only will ethical standards remain what they were in Dr. Mitchell Bruce's early days.

I am, Sir, yours faithfully,

Saffron Walden, Nov. 4th, 1916. JOHN P. ATKINSON, JUN.

THE DIFFERENTIATION OF HEART MURMURS IN SOLDIERS.

To the Editor of THE LANCET.

SIR,—I have read with great interest the letter by Professor David Drummond on the above subject which appeared in your issue of Nov. 4th. I venture to give my experience with regard to the effect of external pressure on functional murmurs, as I am led to believe that many medical men are not aware that steady pressure over the site of a functional murmur at or near the apex will obliterate that murmur, but will not do so in the case of an organic murmur. I have seen quite a number of cases of officers on sick-leave, or invalided out of the service, who have come to me with a history of organic valvular disease, but on examination the murmur has proved to be functional by the pressure test, and has later disappeared on treatment. I do not find it necessary to press in the ribs with the fingers as in Professor Drummond's method, because simple pressure with the bell-piece of the stethoscope has proved sufficient in all cases I have seen. I am particularly interested in Professor Drummond's letter, as I had the pleasure of attending his clinical lectures when I was a student.

I am, Sir, yours faithfully,

Harley-street, Nov. 3rd, 1916. LESLIE THORNE THORNE.

THE TREATMENT OF VENEREAL DISEASES.

To the Editor of THE LANCET.

SIR,—In the annotation entitled "Practical Instruction in the Diagnosis and Treatment of Venereal Diseases," in THE LANCET of Oct. 28th I notice the statement that neosalvarsan is the only colloid arsenical preparation which can at present be wisely administered intramuscularly. Your contributor evidently overlooked galyl (Bresillon), which is now so largely used intravenously in place of salvarsan. This preparation is also extensively used intramuscularly, especially in France, and with the very best results. It is a very perfect oily emulsion, which, with a little care in technique, can be used with little or no pain. The results are excellent, both immediate, in the clearing up of evident lesions, and ultimate, as proved by the Wassermann test. Personally I have used this preparation in over 400 injections with the best results and without the slightest mishap or inconvenience to the patient.

I am, Sir, yours faithfully,

Leicester-square, W.C., Nov. 2nd, 1916. GERALD DALTON.

CARDIFF MATERNITY HOSPITAL.—Commander Sir Edward Nicholl, who has already subscribed £10,000 to the King Edward VII. Hospital, Cardiff, has given £50,000 towards the Nursing Home and Maternity Hospital. This department of the King Edward VII. Hospital will cost £120,000, of which £80,000 have been subscribed or promised.

The War.

THE CASUALTY LIST.

THE following names of medical officers appear among the casualties announced since our last issue:—

Killed.

Capt. B. J. L. Fayle, R.A.M.C., attached Royal Horse Artillery, was educated at Clifton College and at Cambridge, and qualified in 1913. He held house appointments at the Bristol General Hospital, and joined the R.A.M.C. just prior to the war, obtaining his captaincy in March, 1915.

Capt. T. C. Kidner, R.A.M.C., attached Middlesex Regiment, was a student at the Royal Dental Hospital, London, and at the Middlesex Hospital, qualifying in dentistry in 1912 and in medicine and surgery in 1914. He was in practice at Stoke Holy Cross, Norwich, before the war, and joined the R.A.M.C. in September, 1914, obtaining his captaincy in March, 1915.

Capt. F. N. S. Hitchcock, New Zealand Medical Corps, was a student at St. Thomas's Hospital, London, and qualified in 1907.

Died of Wounds.

Capt. M. J. Rees, R.A.M.C., was educated at the City of London School and at the University of Wales, Aberystwith, and was a student at Guy's Hospital, London, qualifying in 1902. After holding health appointments at Reading and at Aberdare he went to the Local Government Board at Whitehall, and was a medical inspector when he volunteered for the R.A.M.C. He obtained his captaincy in January this year.

Died.

Lieut. F. Whitaker, R.A.M.C., was educated at Cambridge University and at St. Bartholomew's Hospital, London, and qualified in 1903. He had held appointments at the Royal Infirmary, Halifax, and was in practice at Halifax when he joined the R.A.M.C. in October, 1915.

Wounded.

Capt. R. Burgess, R.A.M.C.
Capt. G. L. Jones, R.A.M.C., attached Devon Regiment.
Capt. J. M. Mackenzie, M.C., R.A.M.C., attached Northumberland Fusiliers.
Lieut. G. McI. Dale, R.A.M.C., attached Rifle Brigade.
Capt. H. B. Low, R.A.M.C.
Capt. A. E. Quine, R.A.M.C., attached Middlesex Regiment.
Lieut. R. Younger, R.A.M.C., attached Royal Warwick Regiment.
Capt. N. M. McNeill, Canadian Army Medical Corps, attached Canadian Infantry.

THE HONOURS LIST.

For distinguished service and devotion to duty during the typhus epidemic at Gardelegen Prisoners of War Camp, Germany, during the spring and summer of 1915, when 12 of the 16 medical men of the Allied Forces contracted the disease and two died, the following honours have been conferred:—

C.M.G.—Major P. C. T. Davy, R.A.M.C.
D.S.O.—Capt. A. S. Williams, R.A.M.C., and Capt. A. J. Brown, R.A.M.C., Special Reserve.

MENTIONED IN DESPATCHES.

The names of the following medical officers are to be added to the despatches detailed:—

From General Sir Ian Hamilton, dated Dec. 11th, 1915 (THE LANCET, Feb. 5th, 1916, p. 321): Capt. F. C. Casement, R.A.M.C., Temp. Surg. E. S. Calthorp, R.N., Staff-Surg. A. T. Rivers, R.N., Staff-Surg. C. E. C. Stanford, R.N.

From General Sir Charles Monro, dated March 6th, 1916 (THE LANCET, July 22nd, 1916, p. 163): Capt. A. J. Horne, R.A.M.C., Temp. Hon. Capt. W. T. Thomas, R.A.M.C., Temp. Lieut. H. E. Brown, R.A.M.C. (since relinquished his commission).

From Sir Reginald Wingate, dated August 8th, 1916 (THE LANCET, Nov. 4th, 1916, p. 806): Capt. E. Gibbon R.A.M.C.

Lieutenant-Colonel Gilbert Barling, R.A.M.C. (T.F.), has been appointed a consulting surgeon to the British forces in France.

OBITUARY OF THE WAR.

BLENMAN BUHÓT GRAYFOOT, M.D. DURH., M.R.C.S. ENG., L.R.C.P. EDIN., C.B.,

COLONEL, INDIAN MEDICAL SERVICE.

Colonel B. B. Grayfoot, whose death from illness contracted on active service was reported on Sept. 30th, was son of the Rev. Chrichlow Grayfoot, sometime Chaplain to the Forces in Barbados, and was born in 1860. At the age of 20 he came to this country with a Gilchrist scholarship, and studied medicine at Edinburgh and University College, London, obtaining in due course the conjoint and triple diplomas, and later the M.D. of Durham University. Passing out of Netley into the Indian Medical Service in 1886, he was for some years in charge of the New Civil Hospital at Karachi, and spent his whole time in the Bombay Presidency, where he was medical storekeeper to the Government until his appointment as A.D.M.S. of the Lahore Division in 1912. On the outbreak of war he went with this division to France, where he was mentioned in despatches and appointed C.B. for his services. In December, 1915, he was transferred to Mesopotamia, where he later became D.D.M.S. For a period he acted as D.M.S. to the whole of the Tigris Forces. His tireless energy and apparent ability to withstand the rigours of the climate gave place to an attack of jaundice of a malignant variety, from which he died at Alexandria on his way home to England.

Colonel Grayfoot was a man of strong character and genial disposition, trusted by his superiors and looked up to by those of whom he had charge, both natives and Eurasians. It is stated that no one could be awkward or shy in his presence, and many stories are current of his outspokenness on occasions which demanded it. On the occasion of an official visit to a local hospital which was short of necessary funds, the Governor remarked that a certain door wanted new paint to bring it into keeping with the appearance of the rest of the building. Colonel Grayfoot replied: "We had the hospital whitewashed for this visit. Your Excellency, and should have had the door painted if we could, but there wasn't enough money for that!" Colonel Grayfoot will be greatly missed both in India and at home. The portrait which we are able to give of him is from a pencil sketch of the whole of his officers' mess by the French artist Sarrut.

DEATHS AMONG THE SONS OF MEDICAL MEN.

The following sons of medical men must be added to our lists of those who have fallen during the war:—

Second Lieut. J. R. Greathead, Rifle Brigade, sixth son of the late Dr. J. B. Greathead, of Grahamstown, South Africa.

Second Lieut. G. C. R. Atkinson, East Lancs Regiment, elder son of Dr. T. R. Atkinson, of Chadwell Heath, Essex.

A. R. H. Chessall, London Regiment, second son of the late Dr. W. Chessall, of Horley, Surrey.

Second Lieut. H. S. Blair, Duke of Cornwall's Light Infantry, elder son of Dr. C. S. Blair, of Richmond, Surrey.

Second Lieut. W. H. Dyson, London Regiment, son of Dr. W. Dyson, of Sheffield.

Second Lieut. A. S. Cleveland, Sherwood Foresters, elder son of Dr. R. A. Cleveland, of Nicosia, Cyprus.

Corp. A. G. Leeson, Canadian Infantry, only son of the late Dr. A. E. Leeson, of Dorset-square, London.

Lieut. F. S. Rankin, Canadian Engineers, attached Royal Flying Corps, eldest son of Dr. W. D. Rankin, of Woodstock, New Brunswick.

Second Lieut. T. Maxwell, Royal Dublin Fusiliers, only son of Mr. P. W. Maxwell, F.R.C.S.I., of Lower Baggot-street, Dublin.

Second Lieut. T. S. Woods, Royal Field Artillery, eldest son of Sir R. H. Woods, Past President of the Royal College of Surgeons in Ireland, of Merrion-square, Dublin.

CENTRAL MEDICAL WAR COMMITTEE: THE FINANCIAL INTERESTS OF MEDICAL MEN ON SERVICE.

The Central Medical War Committee have drawn up the following procedure which they recommend to the attention of medical men in all localities. Under the procedure the financial interests of medical men on naval or military service would be to some extent protected; loss to them may be inevitable, but much will be saved if the suggestions of the Central Medical War Committee are faithfully followed:—

1. On a new patient presenting himself he should be asked the name of the doctor who last attended him. If his doctor is absent on service and has left a locum tenens an attempt should be made to induce the patient to go to the locum tenens.

2. If the last doctor who attended be on military service it should be explained to the patient that attendance will willingly be given *on behalf of that practitioner* and on no other terms.

3. Any attendances on behalf of such patients should be carefully and separately recorded and a list of such attendances sent at regular intervals to the representative of the absentee.

4. An attempt should be made to ascertain the fees charged by the absentee, and a charge not less than this should be made on his behalf.

5. Accounts rendered on behalf of the absentee (if sent in by the deputy) should mention the absentee's name, and moneys received should be divided according to the scheme adopted by the Local Medical War Committee.

6. The rule of dividing the fees should apply to all kinds of work. No exception, for example, should be made as regards operations, inquests, consultations, and anæsthetics, unless some special arrangement has been arrived at as regards particular services by the Local Medical War Committee after consulting the local profession.

7. New patients introduced by the patient of an absentee should be regarded as belonging to the absentee's practice.

8. In cases in which the patient's frequent change of doctor leads to doubt as to who should be regarded as the regular attendant, the absentee should be given the benefit of the doubt.

9. No patient attended on behalf of an absentee should be attended by the deputy for at least one year after the absentee's return.

10. The greatest discretion should be used as to the introduction of a partner or assistant or in commencing a new practice in an area from which men are absent on service.

11. Great care should be taken in the buying and selling of practices. Newcomers to a district should be doubly scrupulous in regard to the practices of absentees, and should at once ascertain and join in any arrangements that have been made for the protection of absent practitioners.

12. The honour of the profession is specially involved where a vacancy occurs through the death of a practitioner on service. Definite arrangements have been made to meet such a contingency in some areas and should be made in all. Every assistance should be given in enabling the successor to the practice to have such a fair start as will entitle the dependents on the practice to expect a fair price for it. The local practitioners should carry out the same procedure with regard to the successor as they had undertaken with regard to the man who has fallen while on service—namely, refuse to attend the patients of the practice except on behalf of the successor, for a period of at least a year after the practice has been taken over.

13. In all cases of doubt as to what is the right course of action as regards an absentee the practitioner should consider what he would like his neighbours to do if he were absent on military service. The Local Medical War Committee or the Central Medical War Committee will always be glad to advise.

PHYSICAL EXAMINATION OF CANDIDATES FOR FLYING SERVICE.

We all admire the work of our aviators, and realise that they must be picked men—how carefully picked few of us have any knowledge. Consequently there is great interest in the account of the measures taken in selecting airmen for the United States Navy and the French Army, which are detailed in the *Military Surgeon* (Washington, D.C.) for October. To begin with, in each case men are required who are ordinarily sound and fit for general service. The United States Navy then requires that their eyesight and hearing shall be fully normal and lays special stress on the absence of middle-ear disease and on careful tests of the sense of equilibration or the power of maintaining balance. The French service makes very minute inquiry,[1] by the help of the D'Arsonval chronograph, into the psycho-physiological aptitudes of candidates, testing their reaction time to auditory and sensory stimuli (must not exceed 0·15 of a second) and to visual signals (must not exceed 0·2 of a second). Emotional tests are also applied, and a candidate is rejected if his respirations are disturbed for more than 1/25th of a second by the unexpected firing beside him of a pistol. So it is said "the heroes of the air are neither neuropathic nor drug users, but calm men of steady hearts, with nerves of steel, strong eyes, and sure hands." In the United States Naval Air Corps the particular after-effect of the use of alcohol, viz., delayed reaction time, causing a lessened ability to act quickly, is a known danger, and its bad effects are prevented by voluntary abstinence.

[1] THE LANCET, March 18th, 1916, p. 633.

HOSPITAL MAGAZINES.—There are many magazines issued for the amusement of the patients and staffs at our war hospitals, among the best being the *Craigleith Hospital Chronicle* and the *Gazette of the 3rd London General Hospital*, the November issues of which have now been published. Both contain pictures and letterpress, humorous and serious, of a creditable standard, and as the profits of the magazines are devoted to providing extra comforts for our wounded soldiers, the publications are deserving of support. The *Craigleith Chronicle* can be obtained at the 2nd Scottish Hospital, Craigleith, Edinburgh, price 6*d.*, and the *Gazette* at the 3rd London General Hospital, Wandsworth, price 3*d.*

HANDICRAFTS FOR THE WOUNDED.—An appeal signed by Lady Emma Crichton and the Hon. Mrs. Eliot York has been issued on behalf of a fund for supplying materials for handicraft to the wounded in the Royal Victoria Hospital, Netley. For this purpose a sum of £600 is required, and a sale of soldiers' handicrafts will be held in connexion with the fund on Nov. 24th at 19, Grosvenor-square, when H.R.H. the Princess Christian will preside.

Medical News.

EXAMINING BOARD IN ENGLAND BY THE ROYAL COLLEGES OF PHYSICIANS OF LONDON AND SURGEONS OF ENGLAND.—As the result of the Final Examination held from Oct. 10th to 24th the following candidates were among those approved in the undermentioned subjects, but are not qualified to receive the diplomas:—

Medicine.—A. Arias, St. Bartholomew's; H. H. Bailey, L.M.S.S.A. Lond., London; D. J. Batterham, B.A. Cantab., Cambridge and St. Bartholomew's; Margaret Eliza Björkegren, Royal Free; L. G. Blackmore, Middlesex; C. J. L. Blair, St. Bartholomew's; H. J. Blampied, St. Thomas's; C. S. Bluemel, M.A., M.D. Colorado, Colorado University; Hilda Kathleen Brade, Manchester; H. R. Buttery, Cambridge and St. Bartholomew's; P. A. Buxton, B.A, Cantab., Cambridge and St. George's; O. St. L. Campion, Guy's; C. H. Carroll, London; A. A. Cockayne, B.A. Cantab., Cambridge and St. Thomas's; C. J. C. Cooke, University College; G. F. Cooke, St. Bartholomew's; R. N. Cooper, M.B., B.S. Bombay, Bombay University; W. Cramer, University College; H. A. De Morgan, L.M.S.S.A., Middlesex; J. D. Dimock, L.D.S. Eng., Middlesex; J. R. Dingley, University College; H. W. Eddison, B.A. Cantab., Cambridge and Guy's; E. E. Gibb, B.A. Cantab., Cambridge and St. Thomas's; A. Girgis, London; L. B. Goldschmidt, B.A. Cape, King's College; Iris Harding, Royal Free; T. L. Heath, Guy's; N. S. Hewitt, B.A. Cantab., Cambridge and London; L. G. Higgins, B.A. Cantab., Cambridge and St. Thomas's; C. Homi, M.B., B.S. Bombay, Bombay and Middlesex; H. Johnson, L.S.A. Lond., Guy's; E. A. C. Langton, St. Bartholomew's; Hilda Mary Lazarus, M.B., B.S. Madras, Madras University; H. W. Leatham, B.A. Cantab., Cambridge and St. Thomas's; J. B. S. Lewis, B.A. Cantab., Cambridge and St. George's; H. D. McIlroy, B.A. Cantab., Cambridge and London; K. A. I. Mackenzie, B.A. Oxon., Oxford and St. Bartholomew's; Marie Mathilde Alice Moralt, Royal Free; A. H. Morris, Bristol; J. B. Mudge, St. Bartholomew's; Elizabeth O'Flynn, St. George's; A. Orr-Ewing, B.A. Cantab., Cambridge and St. Bartholomew's; W. W. Newton, Birmingham; A. L. Packham, L.D.S. Eng., Middlesex; J. A. Panton, Manchester; A. A. Prichard, M.A. Cantab., Cambridge and Glasgow; F. H. Smith, M.A. Cantab., L.D.S. Eng., St. George's; N. F. Smith, B.A. Oxon., St. Bartholomew's; R. H. Tasker, Bristol; H. Taylor, Liverpool; S. A. T. Ware, St. Thomas's; A. G. E. Wilcock, Cambridge and St. George's; K. M. C. Woodruff, Guy's; W. G. Woolrich, B.A. Cantab., Cambridge and St. Thomas's.

Surgery.—C. S. Bluemel, M.A., M.D. Colorado, Colorado University; J. Burke, Glasgow and London; A. A. Cockayne, B.A. Cantab., Cambridge and St. Thomas's; A. B. Cocker, L.D.S. Eng., Guy's; M. A. B. Demerdash, University College; H. A. De Morgan, L.M.S.S.A., Middlesex; Frances Jane Du Pré, Sheffield; T. L. Heath, Guy's; M. C. Joynt, Guy's; G. M. Kendall, B.A. Cantab., Cambridge and St. Thomas's; C. F. Kernot, London; E. R. Longstaff, St. Bartholomew's; H. D. McIlroy, B.A. Cantab., Cambridge and London; N. H. S. Maelzer, Guy's; C. J. Penny, B.A. Cantab., Cambridge and Middlesex; W. M. A. Rahman, University College; M. Shimberg, London; and W. G. Verniquet, B.A. Cantab., Cambridge and St. Bartholomew's.

Midwifery.—J. K. Adhya, M.B. Calcutta, Calcutta and Middlesex; E. G. Anderson, London; E. B. Andreae, London; H. D. Apergis, Guy's; H. H. Bailey, L.M.S.S.A. Lond., London; E. J. Ball, Ph.D. Heidelberg, Bristol; N. A. H. Barlow, Guy's; H. W. Barnes, King's College; D. J. Batterham, B.A., Cantab, Cambridge and St. Bartholomew's; E. V. Beale, B.A. Cantab., Cambridge and London; D. C. Beaumont, Cambridge and London; W. T. Beswick, St. Thomas's; A. O. Bolton and J. E. A. Boucaud, St. Bartholomew's; E. D. Broster, B.A. Cantab., Cambridge and University College; W. B. Buer, Guy's; R. Calvo, St. Thomas's; O. St. L. Campion, Guy's; J. E. Carpenter, London; O. C. Carter, London; D. G. Churcher, St. Thomas's; E. A. Clegg, Middlesex; A. M. Clement, St. Thomas's; R. N. Cooper, M.B., B.S. Bombay, Bombay University; R. S. Corbett, St. Bartholomew's; G. R. Cowie, Middlesex; J. Cretin, St. Bartholomew's; D. R. Curnock, L.D.S. Eng., Charing Cross; G. V. Davies, St. Mary's; S. R. E. Davies, St. Bartholomew's; P. G. S. Davis, St. Thomas's; L. P. de Abrew, Ceylon and London; H. B. Dodwell, B.A. Cantab., Cambridge and University College; C. T. J. N. Drobig, St. Thomas's; E. F. Fernando, St. Mary's; L. P. L. Firman-Edwards and R. French, St. Bartholomew's; P. E. F. Frossard, London; Satyapriya Ghosh, Royal Free; L. Gill, Guy's; Eryl Glynne, Royal Free; E. F. S. Gordon, St. Bartholomew's; Iris Harding and Joan Hardy, Royal Free; L. B. Hartley, B.A. Cantab., Cambridge and St. Thomas's; K. R. Hill, University College; J. C. C. Howe, Guy's; J. Kyle, Guy's; Hilda Mary Lazarus, B.A., M.B., B.S. Madras, Madras; F. R. Leblanc, Guy's; H. W. Lewis, Middlesex; E. E. Llewellyn, B.A. Cantab., Cambridge and St. Bartholomew's; R. W. Lush, B.A. Oxon., Oxford and Middlesex; A. G. F. McArthur, B.A. Cantab., Cambridge and St. Thomas's; B. Maclean, University College; T. H. McLeod, St. George's; R. T. Macrae, London; M. Mahfooz, St. Thomas's; J. S. Matthews, University College; P. N. Menon, University College; M. W. H. Miles, St. Thomas's; Marie Mathilde Alice Moralt and Noel Olivier, Royal Free; S. W. Page, B.A. Cantab., Cambridge and St. Bartholomew's; V. S. R. Pandit, St. Bartholomew's; D. F. Panton, London; Eleanor Joyce Partridge, Royal Free; A. H. Pearce, B.A. Cantab., Cambridge and St. Thomas's; C. J. Penny, B.A. Cantab., Cambridge and Middlesex; W. I. F. Powell, London; A. A. Prichard, M.A. Cantab., Cambridge and Glasgow; H. N. Pritchett, Guy's; Marianne Olive Ramsay, B.Sc. Lond., Royal Free; H. E. Rhodes, B.A. Cantab., Cambridge and London; R. I. Rhys, St. Bartholomew's; D. W. R. Richardson, B.A. Cantab., Cambridge and London; J. P. Ross, St. Bartholomew's; G. H. Rossdale, B.A. Oxon., Oxford and St. Bartholomew's; H. Rowan, University College; A. R. Sami, St. Bartholomew's; C. E. A. Shepherd, St. George's; M. Shimberg, London; R. D. Shirwalker, University College; P. A. Smuts, St. Bartholomew's; E. D. Spackman, B.A. Cantab., Cambridge and St. Bartholomew's; M. B. R. Swann, B.A. Cantab., Cambridge and King's College; Ellen Sylk, Royal Free; P. R. Tennekoon, London; D. J. Thomas and J. H. Thomas, University College; F. F. Tisdall, M.B. Toronto, Toronto University; W. G. Verniquet, B.A. Cantab., Cambridge and St. Bartholomew's; W. J. Walters, B.A. Cantab., Cambridge and Guy's; P. Ward, Sheffield; C. H. Warner, B.Sc. Lond., Middlesex; F. E. G. Watson, St. Bartholomew's; A. W. Wells, London; W. H. White, St. Thomas's; and S. Yahilevitz, London.

MEDICO-PSYCHOLOGICAL ASSOCIATION OF GREAT BRITAIN AND IRELAND.—The next general meeting will be held on Tuesday, Nov. 21st, at 2.45 P.M., at 11, Chandos-street, Cavendish-square, W., Lieutenant-Colonel David G. Thomson presiding. Captain Colin McDowall will read a paper on Functional Gastric Disturbance in the Soldier.

ROYAL SOCIETY OF ARTS.—The sessional arrangements include an opening address (Nov. 15th at 4.30 P.M.) by Dugald Clerk, F.R.S., chairman of the council, on "The Stability of Great Britain"; a paper (Dec. 20th at 4 P.M.) by A. C. Benson, C.V.O., Master of Magdalene College, Cambridge, on "Classical and Scientific Education"; a series of three Howard lectures (Nov. 27th and Dec. 4th and 11th, at 5 P.M.) by John S. S. Brame, professor of chemistry at the Royal Naval College, Greenwich, on "Coal and its Economic Utilisation"; and a series of four Cantor lectures (Jan. 29th and Feb. 5th, 12th, and 19th, 1917, at 4.30 P.M.) by Professor A. B. Pite, F.R.I.B.A., on "Town Planning and Civic Architecture." Admission is by ticket.

Parliamentary Intelligence.

HOUSE OF COMMONS.

WEDNESDAY, NOV. 1ST.

Medical Men and the Silver War Badge.

Mr. WATT asked the Financial Secretary to the War Office whether the silver war badge for service was refused to medical men who had served for a year or over in the Royal Army Medical Corps if they had not relinquished their commissions on account of old age, or physical infirmity arising from wounds, or sickness caused by military service; whether he was aware that this regulation worked out unfairly to many medical men who had left the service only on the urgent call of duty to the civilian population who were bound to have some medical attention; and whether he would alter the regulation accordingly.—Mr. FORSTER answered: The silver badge was introduced specifically for distinguishing those who, having served with His Majesty's Forces since August 4th, 1914, have relinquished their commissions or appointments or have been discharged on account of age, wounds, or sickness. It is not a commemorative medal for service during the war. If a medal is granted for the present war, claims of those persons whom the honourable member mentions will be considered with all others who have served in the war.

Medical Appeal Boards.

Mr. ANDERSON asked the Financial Secretary to the War Office how many medical appeal boards had been set up and in what parts of the country; and whether he could state by what means a man who was convinced that he had not received fair treatment by the first medical board could get

in touch with the appeal board and so obtain re-examination.—Mr. FORSTER replied: One special medical board has been set up in London. Men who after being passed fit for service by a recruiting medical board are convinced that they have not received fair treatment can produce evidence to that effect before the tribunal. If the tribunal consider that the men have not been correctly classified by the recruiting medical board and the case goes to the special medical board in London, arrangements are made for the man's travelling and subsistence during the period he is away from home.

Mr. HOGGE: May I ask whether the chairmen of the various tribunals in Scotland have decided that provision could not be made on account of the expenses involved, and under those circumstances could not an appeal board be established in the capital of each country?—Mr. FORSTER: I hope that the answer I have given will remove that feeling.

Medical Arrangements for the Volunteers.

Mr. HOGGE asked the Financial Secretary to the War Office whether there were any medical arrangements for the County of London Volunteers; whether he was aware that accidents occurred during training on Sundays and that the provision of medical assistance was haphazard; whether he was aware that many doctors would be willing to give their services regularly if they were recognised on the old regimental system whereby they could be allocated to the volunteers in their own district; and whether he would devise a system which would utilise such men for a very desirable purpose.—Mr. FORSTER answered: A scheme for the formation of a medical service as part of the Volunteer organisation has been prepared, but certain details remain to be settled. It is hoped, however, that the necessary instructions will be issued very shortly. The considerations referred to in the question have been borne in mind in framing the scheme mentioned above.

Health of Australian Troops.

Mr. LYNCH asked the Financial Secretary to the War Office whether he could state the figures showing the number of deaths from pneumonia during last year among Australian soldiers at Perham Downs; and whether, in view of the difference between the climate of this country and that of Australia, extra precautions would be taken this year to ensure that the health of the Australian troops here should be maintained at as high a level as possible.—Mr. FORSTER said in reply: I have not the figures available, but I can assure the honourable Member that the medical officers, who are themselves Australians, are fully alive to the point and all precautions are being taken.

Infectious Disease and the Discharge of Soldiers.

Sir CHARLES NICHOLSON asked the Financial Secretary to the War Office whether it was the case that no soldier was discharged from the Army, except for tuberculosis, into civil life whilst still in an infectious condition owing to any illness, and particularly any venereal disease; and whether, that was to say, such a soldier was retained under treatment until all danger of infection to others had passed, especially as regards any venereal disease.—Mr. FORSTER wrote in reply: Yes, sir.

T.N.T. Poisoning.

Mr. ANDERSON asked the Home Secretary whether his attention had been called to the inquest on Mrs. Lydia Elizabeth Gibson, aged 24, of Ponder's End, Enfield, who died in St. Bartholomew's Hospital from the effects of T.N.T. poisoning; whether he was aware that it was stated on evidence that the recommendations and precautions against this industrial disease were not being observed at Woolwich; that it was stated by Dr. Collis, the Home Office medical inspector, that as regards the health of women examiners the whole machinery of protection against poisoning had broken down; that the coroner declared that such cases occurred time and again and that it was impossible to find out who was responsible; and whether he would say what further action was to be taken to protect all concerned against the poisonous effect of T.N.T.—Mr. H. SAMUEL replied: The deceased in this case was an examiner in the service of the Inspection Department of the Ministry of Munitions, and was employed by that department at a factory in the north of London, and the usual precautions had not been carried out in her case owing to a misunderstanding as to her position. It was to this point Dr. Collis drew attention at the inquest. No reference was made to the conditions at Woolwich, where, I am informed, the greatest care is exercised, nor was the deceased in any way connected with the Arsenal, but the Inspection Department used to have its headquarters at Woolwich, and its examiners were, and still frequently are, referred to as Woolwich examiners. This no doubt gave rise to the erroneous impression that the Arsenal authorities were concerned in the case. As regards the steps being taken to protect workers against this disease, I would refer the honourable Member to answers to recent questions on this subject.

Physical Condition of School Children.

Mr. ANDERSON asked the Prime Minister whether his attention had been called to the report of Sir George Newman, Chief Medical Officer to the Board of Education, and to his statement that out of the 6,000,000 children in our elementary schools not less than 1,000,000 were so physically or mentally defective or diseased as to be unable to derive reasonable benefit from the education which the State provided; whether he was aware that this state of things was largely due to years of bad housing, insufficient nourishment, and poverty; and whether the Government, in considering after-the-war schemes and policies for the improvement of trade, would also consider schemes of improved social organisation with a view to ridding the country of slums and destitution and placing within reach of all the basis for strong healthy life.—Mr. ASQUITH replied: Yes, sir, these matters are being carefully considered.

Cannock Chase Camps.

Commander WEDGWOOD asked the Financial Secretary to the War Office whether the deaths from pneumonia arising in the Cannock Chase camps during last winter were above the average; whether he had heard complaints as to the condition of the hutments on Cannock Chase; and, if not, would he have an independent inquiry made into the housing conditions on the Chase before the winter came on.—Mr. FORSTER wrote in reply: According to the information in the possession of the Army Council there were only six deaths from October, 1915, to April, 1916, two in February, and four in March. No complaints have reached the War Office as to the condition of the hutments on Cannock Chase.

Hospital Accommodation under Canvas.

Commander WEDGWOOD asked the Financial Secretary to the War Office whether it had now been arranged that convalescent hospitals should be under canvas rather than in huts; what, if so, was the type of tent used; was he satisfied that all such tents were watertight, and also with the class of tent and the flooring of such tents; and, if not, will he send a small committee of responsible civilians to inspect all these convalescent tented hospitals.—Mr. FORSTER (in a written answer) replied: It is necessary to expand hospital accommodation from time to time, and hospitals are sometimes put under canvas in climates where patients and convalescents can remain under canvas in winter. Where this is done proper hospital marquees are provided and extra comforts for the winter are also issued. No complaints of the kind suggested by the honourable Member have been received. I cannot agree to the proposal contained in the last sentence of my honourable friend's question.

TUESDAY, NOV. 7TH.

Military Hospitals in Ireland.

Mr. COOTE asked the Secretary for War (1) whether he could give reasons why the military hospitals at Omagh, Enniskillen, Armagh, and Dundalk were closed and the military patients at those depôts sent to the civil infirmaries in each locality; whether these military hospitals were fully equipped for all their needs; and what was the relative cost of military patients per day in the military and civil hospitals respectively; and (2) whether the assistant deputy of military services, Belfast district, was the authority on all military matters connected with his district; was he consulted before the military hospitals at Omagh, Enniskillen, Armagh, and Dundalk were closed; were they closed with his approval; who was the present deputy of military services in Ireland; and what other posts had he held during the last 12 months.—Mr. LLOYD GEORGE replied: The small military hospitals at Omagh, Enniskillen, Armagh, and Dundalk are unsuitable for the reception of sick and wounded from overseas as they are not equipped for the purpose. They are only used therefore for cases which do not require serious medical or surgical treatment. On the other hand, the county hospitals have experienced surgeons and suitable staff, and have expressed a desire to receive sick and wounded from overseas. All parties have much appreciated the new arrangements, and the scheme is working very satisfactorily at a lessened annual cost to the State. Detailed figures of the relative cost are not available. The authority to decide questions of opening or closing hospitals is the General Officer Commanding-in-Chief, Irish Command.

Nerve-shaken Soldiers.

Colonel YATE asked the Secretary to the Local Government Board whether, in view of the number of men who had been discharged from the Army owing to the effects of uncertifiable nerve strain, any steps had been taken by local committees, acting under the instructions of the Central Statutory Committee, to provide convalescent homes, free from detention or suspicion of connexion with lunacy, to which ex-soldiers of this class might go temporarily, with a view to the promotion of recovery and to linking them up again with their ordinary employment.—Mr. HAYES FISHER replied: The Statutory Committee have advised the local committees that various kinds of treatment are required for

nerve-shaken men. The Statutory Committee have been making careful inquiries into this difficult question, and they have under consideration at the present time a scheme under which appropriate cases would be treated and trained in an institution or institutions in which cases of ordinary wounds and illness other than mental would also be received.

Treatment of Tuberculosis in Scotland.

Mr. MACCALLUM SCOTT asked the Secretary for Scotland whether any steps were being taken to secure throughout Scotland greater progress in combating tuberculosis by any of the following methods—viz., by securing more careful diagnosis of cases in which there was any possibility of tuberculous disease and consequently more general notification in the earlier stages, an improvement of housing conditions, and the establishment and development of after-care committees for the supervision of cases after institutional treatment and for assisting patients to qualify for a suitable change of employment.—Mr. TENNANT replied: I recognise the importance of the subject raised by my honourable friend, and have consulted with the Local Government Board for Scotland, who will lose no opportunity of encouraging local authorities, so far as practicable under existing conditions, to deal with the problem of tuberculosis by any available method. I cannot go into greater detail within the limits of a Parliamentary question and answer.

WEDNESDAY, NOV. 8TH.

Medical Students and Military Service.

Answering Captain O'NEILL, Mr. FORSTER (Financial Secretary to the War Office) said: Under instructions issued last August medical students of any year, who have been duly registered in the books of the General Medical Council and who are not fit for general service, are to be relegated to the Reserve and required to continue their medical studies. I have no figures available of the number so released.

Appointments.

Successful applicants for vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.*

CULLEN, J. R. F., M.B., C.M. Glasg., has been appointed Certifying Surgeon under the Factory and Workshop Acts, for the Alexandria District of the county of Dumbarton.

ELLIOTT, G. C., M.D. Edin., Certifying Surgeon under the Factory and Workshop Acts for the Stafford No. 2 District of the county of Stafford.

MCKENDRICK, G. B., L.R.C.P. & S. Edin., L.F.P.S. Glasg., Certifying Surgeon under the Factory and Workshop Acts for the Polloksbaws District of the county of Lanark.

SMITH, MIALL, M.R.C.S., L.R.C.P., Senior Obstetric Assistant to the Royal Free Hospital.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).

When the application of a Belgian medical man would be considered the advertisers are requested to communicate with the Editor.

BARROW-IN-FURNESS, NORTH LONSDALE HOSPITAL.—House Surgeon. Salary £250 per annum, with board, &c.

BOURNEMOUTH, ROYAL VICTORIA AND WEST HANTS HOSPITAL (Boscombe Branch).—House Surgeon for six months. Salary £125, with board, &c.

BRISTOL, CLIFTON DISPENSARY.—Resident Medical Officer. Salary £200 per annum, with furnished house.

BRISTOL GENERAL HOSPITAL.—Casualty House Surgeon. Salary at rate of £175 per annum, with board, &c.

BRISTOL ROYAL INFIRMARY.—House Physician. Salary at rate of £120 per annum, with board, &c.

CHESTER ROYAL INFIRMARY.—House Surgeon and House Physician. Salary £180 and £160 respectively, with board, &c.

DARLINGTON HOSPITAL AND DISPENSARY.—House Surgeon. Salary £200 per annum, with board, &c.

DARTMOOR SANATORIUM.—Medical Assistant.

DERBYSHIRE ROYAL INFIRMARY.—House Physician and Casualty Officer. Salary £210 per annum, with board, &c.

FOLKESTONE, ROYAL VICTORIA HOSPITAL.—Resident Medical Officer. Salary £200 per annum, with board, &c.

GREAT NORTHERN CENTRAL HOSPITAL, Holloway, London, N.—House Surgeon for six months. Salary at rate of £100 per annum, with board, &c.

HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Brompton.—Assistant Resident Medical Officer. Salary £100 per annum, with board, &c. Also House Physician for six months. Salary 30 guineas.

LEEDS INDOOR INSTITUTIONS, Beckett-street.—Female Assistant Medical Officer. Salary £225 per annum, with three meals daily.

LIVERPOOL, BROWNLOW HILL INSTITUTION.—Resident Assistant Medical Officer. Salary at rate of £300 per annum, with rations, &c.

LONDON HOMŒOPATHIC HOSPITAL, Great Ormond-street, London, W.C.—Resident Medical Officers. Salary £80 per annum, with board, &c.

MANCHESTER COUNTY ASYLUM, Prestwich.—Locum Tenens. Salary £7 7s. per week, with board, &c.

NEW HOSPITAL FOR WOMEN, Euston-road.—Temporary Female Assistant Surgeon for six months. Also Female House Physician, Two House Surgeons, and Obstetric Assistant for six months. Salaries at rate of £50 per annum, with board, &c. Also Anæsthetist. Salary £10 10s. Also Clinical Assistant for Ophthalmic Department.

NORDRACH-UPON-MENDIP SANATORIUM.—Assistant Medical Officer. Salary £200 per annum, with board, &c.

PADDINGTON GREEN CHILDREN'S HOSPITAL, London, W.—Temporary Pathologist. Salary £125 per annum, with lunch.

QUEEN CHARLOTTE'S LYING-IN HOSPITAL, Marylebone.—Physician to Infant Consultation Centre.

ROTHERHAM HOSPITAL.—Junior House Surgeon. Salary as arranged, with board, &c.

SHEFFIELD, ECCLESALL BIERLOW UNION INFIRMARY.—Assistant Medical Officer. Salary £200, with board, &c.

SIDMOUTH URBAN DISTRICT COUNCIL.—Medical Officer of Health. Salary £100 per annum.

SOUTHAMPTON PARISH.—Resident Assistant Medical Officer for the Infirmary, Shirley Warren. Salary £250 per annum, with board, &c.

STOCKPORT COUNTY BOROUGH EDUCATION COMMITTEE.—School Medical Officer. Salary £300 per annum.

VENTNOR, ISLE OF WIGHT, ROYAL NATIONAL HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST ON THE SEPARATE PRINCIPLE.—Assistant Resident Medical Officer.

VICTORIA HOSPITAL FOR CHILDREN, Tite-street, Chelsea, S.W.—House Physician. Salary £200 per annum, with board, &c.

WARRINGTON, WHITECROSS MILITARY HOSPITAL.—Resident House Surgeon. Residence, rations, &c., provided.

WEST HAM UNION INFIRMARY, Whipps Cross-road, Leytonstone, N.E.—Resident Assistant Medical Officer. Salary £300 per annum, with usual residential allowances.

THE Chief Inspector of Factories, Home Office, London, S.W., gives notice of vacancies for Certifying Surgeons under the Factory and Workshop Acts at Ballindine, Mayo; Slievereagh, Cork; and at Lewes, Sussex.

Births, Marriages, and Deaths.

BIRTHS.

JEFFRIES.—On Oct. 28th, on H.M. Island Ascension, Jessie, the wife of Surgeon Hugh S. Jeffries, R.N.—a daughter.

MACFIE.—On Oct. 5th, at Deoban, Colchester, the wife of J. D. Macfie, M.B., Tuberculosis Officer to the Essex County Council, temporary Lieutenant, R.A.M.C.—a son.

MARRIAGES.

BROSTER—THOMAS.—On Nov. 6th, at Christ Church, Highfield, Southampton, Lennox Ross, Captain, R.A.M.C., to Edith M. V., elder daughter of Mr. and Mrs. D. C. J. Thomas, Elm Croft, Wynn-road, Southampton, and Johannesburg.

CHARLES—BAILEY.—On Nov. 2nd, at Builth Wells Parish Church, George Frederick Charles, Captain, R.A.M.C. to Dorothy Blake Bailey, daughter of the late John R. Bailey, solicitor, of Mark-lane and Leatherhead.

MARSHALL—MARSHALL.—On Oct. 17th, at May-street Presbyterian Church, Belfast, Robert Marshall, M.B., Captain, R.A.M.C., to Evelyn Mary, only daughter of William Marshall and Mrs. Marshall, Princeton Villa, Bangor, Co. Down.

DEATHS.

BETTS.—On Oct. 31st, Dr. R. Sidney Betts, Assistant Medical Superintendent to the Milton Asylum, Portsmouth.

BOWER.—Killed in action, on Oct. 20th, Lieutenant William C. E. Bower, attached Newfoundland Regiment, R.A.M.C., M.R.C.S., L.R.C.P., late of Torkington House, Stamford, Lincs.

NETTLETON.—On Nov 5th, at Winfrith, Folkestone, in his 90th year, Harry Thomas, Fleet Paymaster, R.N., M.R.C.S.

REES.—Died of wounds, on Oct. 30th, Captain Morgan James Rees, R.A.M.C., M.D. Lond., of the Local Government Board, aged 41.

WHITAKER.—On Oct. 23th, in hospital abroad, Frederick Whitaker, Lieutenant, R.A.M.C., M.A., M.B., B.Ch. Cantab., in his 42nd year.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

BOOKS, ETC., RECEIVED.

ALLEN, GEORGE, AND UNWIN London.
The Making of Micky McGhee and Other Stories in Verse. By R. W. Campbell. Price 3s. 6d. net.
The Flogging Craze. By H. S. Salt. With Foreword by Sir George Greenwood, M.P. Price 2s 6d. net.
Poland's Case for Independence: Essays by Various Authors. Price 7s. 6d. net.

LIPPINCOTT, J. B., COMPANY, London and Philadelphia.
Problems of Physiological and Pathological Chemistry of Metabolism. For Students, Physicians, Biologists, and Chemists. By Dr. Otto von Fürth (Vienna). Authorised translation by Allen J. Smith (Pennsylvania). Price 25s. net.
The Art of Anæsthesia. By Paluel J. Flagg, M.D. Price 15s. net.
Obstetrics: Normal and Operative. By George P. Shears, B.S., M.D Price 25s. net.

MURRAY, JOHN, London.
Form and Function: A Contribution to the History of Animal Morphology. By E. S. Russell, M.A., B.Sc., F.Z.S. Price 10s. 6d. net.
First Aid for the Trenches: Some Simple Instructions for Saving Life that Every Soldier Should Know. By Somerville Hastings, M.S. Lond., F.R.C.S. Eng., Capt. R.A.M.C. (T.F.).
Man as He Is: Essays in a New Psychology. By Sir Bampfylde Fuller, K.C.S.I., C.I.E., Tempy. Major, A.O.D. Price 7s. 6d. net.

ROCKEFELLER INSTITUTE, New York.
Studies (Reprints). Vol. XXIII.

Notes, Short Comments, and Answers to Correspondents.

A PAINTER AND QUACK.

In the Annual Report of the Council of the Royal College of Surgeons of England for 1916 mention is made of the gift to the Museum in the past year by Dr. G. P. Shuter of a pewter enema syringe of peculiar design, "used by the celebrated painter and notorious quack, Dr. Loutherburg." This refers to Philippe Jacques de Loutherburg, who was born at Fulda (Hesse-Nassau) in 1740, and died in London in 1812. His father was a painter and a disciple of Largillière (1656–1746), but wanted his son to follow a military career; his mother, however, favoured the ministry. He followed his own inclination and became a pupil of Charles Vanloo and in his style imitated Berghem and Wouvermans and Salvator Rosa. He was employed by Garrick in 1771 in scene-painting at Drury Lane, and he is credited with the invention of a kind of moving pictures or panorama, called "Eidophysicon." He was admitted to the Royal Academy in 1782. Among his best-known pictures is the "Defeat of the Spanish Armada, 1588," which is in the possession of the Lords Commissioners of the Admiralty and was lent by them to the Royal Naval Exhibition in 1891. As regards his being a quack, the following extract from "Extraordinary Popular Delusions," which has been sent to us by a correspondent, is amusing:—

"Loutherburg the painter and his wife followed the same profitable trade (lectures on animal magnetism); and such was the infatuation of the people to be witnesses of their strange manipulations, that at times upwards of 3000 persons crowded around their house at Hammersmith, unable to gain admission. The tickets sold at prices varying from one to three guineas. Loutherbourg performed his cures by the touch, after the manner of Valentine Greatraks, and finally pretended to a divine mission. An account of his miracles, as they were called, was published in 1789, entitled *A List of New Cures performed by Mr. and Mrs. de Loutherbourg, of Hammersmith Terrace, without Medicine; by a Lover of the Lamb of God. Dedicated to his Grace the Archbishop of Canterbury.* This 'Lover of the Lamb of God' was a half-crazy old woman, named Mary Pratt, of Portland Street, Marylebone, who conceived for Mr. and Mrs. de Loutherbourg a veneration which almost prompted her to worship them. ..... She stated that from Christmas, 1788, to July, 1789, De Loutherbourg and his wife had cured 2000 people, having been made proper recipients to receive divine manuductions; which heavenly and divine influx, coming from the radix *God*, his Divine Majesty had most graciously bestowed upon them to diffuse healing to all, be they deaf, dumb, blind, lame, or halt."

In "Old and New London" will be found a reference to Loutherbourg, citing Horace Walpole's letter to the Countess of Ossory, July, 1789:—

"Loutherbourg, the painter, is termed an inspired physician, and has 3000 patients. His sovereign panacea is barley-water; I believe it is as efficacious as mesmerism. Baron Swedenborg's disciples multiply also. I am glad of it. The more religions and the more follies the better; they inveigle proselytes from one another." "Particular days were set apart and advertised in the newspapers as 'healing days,' and a portion of the house was given up as a 'healing room.' Patients were admitted to the presence of the artist physician by tickets only. In the end the failure of one of Loutherbourg's pretended 'miracles' led to his house being besieged by a riotous mob, and he was compelled to make his escape in the best way he could. He however, subsequently returned to his old quarters at Hammersmith, where he died in 1812."

Loutherbourg is buried in Chiswick churchyard, where Hogarth's tomb also is. His epitaph is an amazing example of rhodomontade.

VITAL STATISTICS OF MALTA.

Field-Marshal Lord Methuen, Governor of Malta, has reported to the Colonial Office upon the Colony for the year 1915–16. From this Blue-book it appears that the civil population on April 1st, 1916, was estimated at 220,968 as against 218,542 on April 1st, 1915. The birth-rate in the year under review was 30·45 per mille, compared with 31·81 per mille in the previous year; the average birth-rate for the past 12 years was 35·74 per mille. The death-rate in 1915–16 was 23·15 per mille, as against 20·90 in 1914–15, while the average for the past decade was 22·34 per mille. The number of marriages was 1482, as compared with 1121 in the previous year. The general state of health in Malta and Gozo during the year was good. The total number of cases of undulant fever reported from the fleet and garrison was only six; the number of goats and sheep found infected and destroyed during the year was 608 out of a total of 7613 examined. 4514 persons were successfully vaccinated. The death-rate among children under 12 months was 261·55 per 1000 births, as against 242·48 in the previous year. The death-rate of children under five years was 96·70 per 1000 of the population at that age, as compared with 89·19 in the previous year. In 1915–16, 3637 patients were admitted into the hospitals of Malta and Gozo, as against 3407 for the previous year. There were 424 deaths, as compared with 411 in 1914–15. In addition to these, 141,956 persons were attended by the district medical officers at the Government dispensaries or at their own residences, as against 133,078 in the previous year. There were 764 patients in the Lunatic Asylum on March 31st, 1916. The number of admissions during the year was 148; 51 were discharged as cured, 10 as relieved, 12 not improved, 30 not subjects for the asylum; the number of deaths was 58. The inmates in the Leper Hospital increased from 109 on March 31st, 1915, to 110 at the end of the year; the number of deaths was 14. The highest temperature in the shade was 99·5° F. at Casal Zurrico on August 31st and the lowest 36·5° at Casal Zeitun on Feb. 5th. The mean temperature for the year was 65·4°, as compared with 63·70 in 1914–15.

THE PROLIFICITY OF OPPOSITE TWINS.

To the Editor of THE LANCET.

SIR,—Your recent correspondents on this subject seem unaware of the conclusive investigation carried out by Sir James Simpson and published under the title "On the Alleged Infecundity of Females Born Co-twin with Males" at the end of the first volume of his collected works. Yet his very reason for putting the results of his inquiry on record is that "the evidence that I have obtained upon the topics in view may probably be fortunate enough to save others from expending time and trouble upon the same research."

His conclusions may briefly be summarised in the statement that whereas sterility in such cases is the rule, though not without exception, in the bovine race, it does not hold good amongst any other animals, and that the human "free-martin" is fertile in the same proportion and to the same degree as other women.

I am, Sir, yours faithfully,

Belfast, Nov. 6th, 1916. MARION B. ANDREWS.

SAUROL.

In an interesting note on a bituminous deposit found in a mine in Switzerland not far from Lake Lugano, Dr. Louis Merian, of Zürich, calls attention to the important therapeutic qualities of the oil obtained by distilling this shale, which appears to be in no respect inferior to ichthyol. The shale is taken down to a factory in Meridè, where it is subjected to distillation. The black bituminous material becomes inflammable when exposed to air and when struck emits a peculiar sulphurous odour. The resulting purified oil contains from 6 to 7 per cent. of sulphur in organic combination and is now on the market for therapeutic use, direct supplies being obtainable from "The Meridè and Besano Bituminous Schists Mining Company, Meridè, Switzerland." Dr. Merian has studied the effect of saurol in skin diseases, and reports good results in eczematous and other conditions. He has also employed it for washing out the urethra and bladder with good results. It has also been employed internally in chronic constipation and in all those cases in which ichthyol has given favourable results. As the supply of ichthyol is restricted, the chief source being in the Austrian Tyrol, it is interesting to note that a Swiss product can replace it without disadvantage, and its cost is considerably less. We have received a specimen of the oil, and in appearance it is indistinguishable from ichthyol, while it readily responds to the test for sulphur and shows altogether characteristics consistent with the statement that it is extracted from bituminous schists rich in fossil fish remains.

JOHN PECHEY.

To the Editor of THE LANCET.

SIR,—I am compiling a biographical memoir of John Pechey (1654–1718), the editor of the first English version of Sydenham, and am desirous of obtaining a sight of the following of his works which are absent from the medical libraries:—

"Promptuarium Praxeos Medicæ," &c., 1694; 1702 (cum aliis tract.); and 1718, Amst.; 1695, Lipsiæ, 12mo.

"The Whole Works of Sydenham," &c., fifth edition, 1710 or 1711, London, 8vo.

"Collections of Acute Diseases," published separately in five parts, 1686–91; and together in one volume, 1691, London, 8vo.

Perhaps one of your readers will be able to help me.

I am, Sir, yours faithfully,

Nov. 6th, 1916. GEORGE C. PEACHEY.

THE FALLING BIRTH-RATE.

"Disgusted" writes to us of a married couple in his district with four fine children, of whom the man several times during recent years has thrashed the woman without provocation, so that she aborted. After the first assault the local magistrate dismissed the case. "Disgusted" thinks—and we agree with him on the facts as stated—that heavy penalty should have been inflicted.

COMMUNICATIONS not noticed in our present issue will receive attention in our next.

Medical Diary for the ensuing Week.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Tuesday, Nov. 14th.

PATHOLOGY (Hon. Secretaries—G. W. Goodhart, C. Price-Jones): at 5 P.M.

Communications:

Dr. E. W. Scripture: A New Method of studying the Pathology of Speech.

Dr. Cresswell Shearer, F.R.S., and Dr. H. Warren Crowe: The Rôle of the Phagocyte in Cerebro-spinal Fever.

N.B.—Will members please note that the meeting will be held at 5 P.M. (instead of 8.30 P.M.).

Wednesday, Nov. 15th.

HISTORY OF MEDICINE (Hon. Secretaries—J. D. Rolleston, Charles Singer): at 5 P.M.

Exhibition (at 4.30 P.M.):

Mr. Macleod Yearsley: Document concerning the King's Evil; and other Exhibits.

Communications:

Mr. D'Arcy Power: A Revised Chapter in the Life of Dr. William Harvey.

Dr. James Rae: The Medical History of the Exiled Stuarts.

Thursday, Nov. 16th.

DERMATOLOGY (Hon. Secretaries—J. E. R. McDonagh, Henry MacCormac): at 5 P.M.

Exhibition of Cases (at 4.30 P.M.).

Friday, Nov. 17th.

OTOLOGY (Hon. Secretaries—E. D. D. Davis, Somerville Hastings): at 5 P.M.

Cases and Specimens:

Will be shown by Mr. W. M. Mollison, Dr. H. Banks Davis, Mr. Somerville Hastings, Mr. E. D. D. Davis.

N.B.—If other members desire to show cases will they please communicate at once with Mr. E. D. D. Davis, 39, Wimpole-street, W.

ELECTRO-THERAPEUTICS (Hon. Secretaries—E. P. Cumberbatch, Robert Knox): at 8.30 P.M.

Discussion:

On "The Treatment of War Injuries by Electrical Methods."

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.

MONDAY.—8.30 P.M., Discussion on Epidemic Nephritis (opened by Capt. Langdon Brown, R.A.M.C.(T.). Followed by Sir W. Osler, Bart., Lieut. J. S. Dunn, R.A.M.C., Mr. W. H. Jessop, Dr. S. West, Mr. J. F. Adler, and Dr. T. J. Horder.

ROYAL MICROSCOPICAL SOCIETY, 20, Hanover-square, W.

WEDNESDAY.—8 P.M., Paper:—Dr. C. Singer: The Microscopic Work of the Accademia dei Lincei.

CHILD STUDY SOCIETY LONDON, Royal Sanitary Institute, 90, Buckingham Palace-road, S.W.

THURSDAY.—6 P.M., Discussion:—Experiments in Hand-writing in Schools—Dr. C. W. Kimmins: A Further Account of Speed Tests in Manuscript Writing. Papers:—Mr. W. Scutt: The Artistic Aspect of Manuscript Writing; Mr. J. W. Samuel: Manuscript Writing in a Central School; Mr. A. Sinclair: Manuscript Writing in a Boys' Elementary School. (The papers will be illustrated by lantern slides.)

SOCIETY OF TROPICAL MEDICINE AND HYGIENE, 11, Chandos-street, Cavendish-square, W.

FRIDAY.—5.30 P.M., Papers:—Dr. H. Bayon: The Development of Pathogenic Properties in Protozoa, with Special Reference to the Herpetomonad Group.—Dr. C. H. Treadgold: A Note on the Eggs of the Liver Fluke Clonorch's sinensis, var. Minor Verdun and Bruyant, 1908.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF PHYSICIANS OF LONDON, Pall Mall East.

TUESDAY AND THURSDAY.—5 P.M., Fitz Patrick Lectures:—Dr. W. H. R. Rivers: Medicine, Magic, and Religion. (Part II.)

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, W.C.

Course of Lectures on the Anatomy of the Human Body, for First aid and Ambulance Students:—

MONDAY.—5 P.M., Lecture VI.:—Prof. A. Keith: The Spinal Cord and Nerves.

WEDNESDAY.—5 P.M., Lecture VII.:—Prof. A. Keith: The Structures concerned in Shock.

FRIDAY.—5 P.M., Lecture VIII.:—Prof. A. Keith: The Anatomy of Wounds received in Warfare.

Anatomical Preparations and Specimens used for illustration will be on exhibition in the Theatre from 3 P.M. to 5 P.M. on each lecture day, and between 10 A.M. and 5 P.M. in the Hall of the Museum on the following day.

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

MONDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Gray: Operations. Mr. B. Harman: Diseases of the Eye. Dr. Simson: Diseases of Women.

TUESDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

WEDNESDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations. Dr Simson: Diseases of Women.

THURSDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Gray: Operations. Mr. B. Harman: Diseases of the Eye.

FRIDAY.—10 A.M., Dr. Simson: Gynæcological Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

SATURDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. Mr. B. Harman: Eye Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

MONDAY.—Clinics:—10.30 A.M., Surgical Out-patients (Mr. E. Gillespie). 2.30 P.M., Medical Out-patients (Dr. T. R. Whipham): Gynæcological Out-patients (Dr. Banister). 3 P.M., Medical In-patients (Dr. R. M. Leslie).

TUESDAY.—2.30 P.M., Surgical Operations (Mr. Carson). Clinics:—Medical Out-patients (Dr. A. G. Auld); Surgical Out-patients (Mr. Howell Evans); Nose, Throat, and Ear Out-patients (Mr. C. H. Hayton). Radiography (Dr. Metcalfe). 3.30 P.M., Medical In-patients (Dr. A. J. Whiting).

WEDNESDAY.—Clinics:—2.30 P.M., Throat Operations (Mr. C. H. Hayton). Children Out-patients (Dr. T. R. Whipham); Eye Out-patients (Mr. R. P. Brooks); Skin Out-patients (Dr. H. W. Barber). 5.30 P.M., Eye Operations (Mr. R. P. Brooks).

THURSDAY.—2.30 P.M., Gynæcological Operations (Dr. A. E. Giles). Clinics:—Medical Out-patients (Dr. A. J. Whiting); Surgical Out-patients (Mr. Carson); Radiography (Dr. Metcalfe). 3 P.M., Medical In-patients (Dr. R. M. Leslie). Special Demonstration:—Dr. R. M. Leslie: Selected Medical Cases.

FRIDAY.—2.30 P.M., Surgical Operations (Mr. Howell Evans). Clinics:—Medical Out-patients (Dr. A. G. Auld); Surgical Out-patients (Mr. E. Gillespie); Eye Out-patients (Mr. R. P. Brooks).

THE THROAT HOSPITAL, Golden-square, W.

MONDAY.—5.15 P.M., Special Demonstration of Selected Cases.

THURSDAY.—5.15 P.M., Clinical Lecture.

CHADWICK PUBLIC LECTURES.

TUESDAY (at the Norwich Museum).—3 P.M., Dr. C. Porter: The Health of the Future Citizen—Lecture III., The Child (illustrated with lantern slides).

INSTITUTE OF HYGIENE, 33-34, Devonshire-street (Harley-street), W.

TUESDAY.—4 P.M., Lecture:—Lady Barrett: Venereal Disease—its Racial Effects.

METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, Nov. 8th, 1916.

Date.		Barometer reduced to Sea Level and 32° F.	Direction of Wind.	Rainfall.	Solar Radiation in Vacuo.	Maximum Temp. in Shade.	Min. Tem	Wet Bulb.	Dry Bulb.	Remarks.
Nov.	2	29·796	S.W.	0·27	73	55	48	48	49	Overcast
,,	3	29·640	S.W.	0·02	69	54	45	49	50	Cloudy
,,	4	29·406	S.W.	0·62	80	55	48	47	49	Fine
,,	5	28·890	S.	0·31	69	57	50	50	51	Raining
,,	6	29·390	S.W.	0·15	83	52	46	45	47	Fine
,,	7	29·126	S.W.	0·25	83	58	47	51	52	Raining
,,	8	29·010	W.	0·46	76	52	48	47	48	Cloudy

The following journals, magazines, &c., have been received:—Canadian Practitioner, Therapeutic Gazette, Dublin Journal of Medical Sciences, Revue de Chirurgie, Philippine Journal of Science, Archives de l'Institut Pasteur de Tunis, Nordiskt Medicinskt Arkiv, British Journal of Dental Science, British Dental Journal, Homœopathic Recorder, American Journal of Public Health, Biochemical Journal, Medico-Legal Journal.

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